APR 5 1944

PAPER TRADE JOURNAL

MARCH 30, 1944

Established 1886

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The epochal production of American industry since Pearl Harbor, setting almost fantastic records despite the severe and unavoidable handicaps of wartime, is a glorious tribute to the power and ingenuity of free enterprise.

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GOTTESMAN & COMPANY

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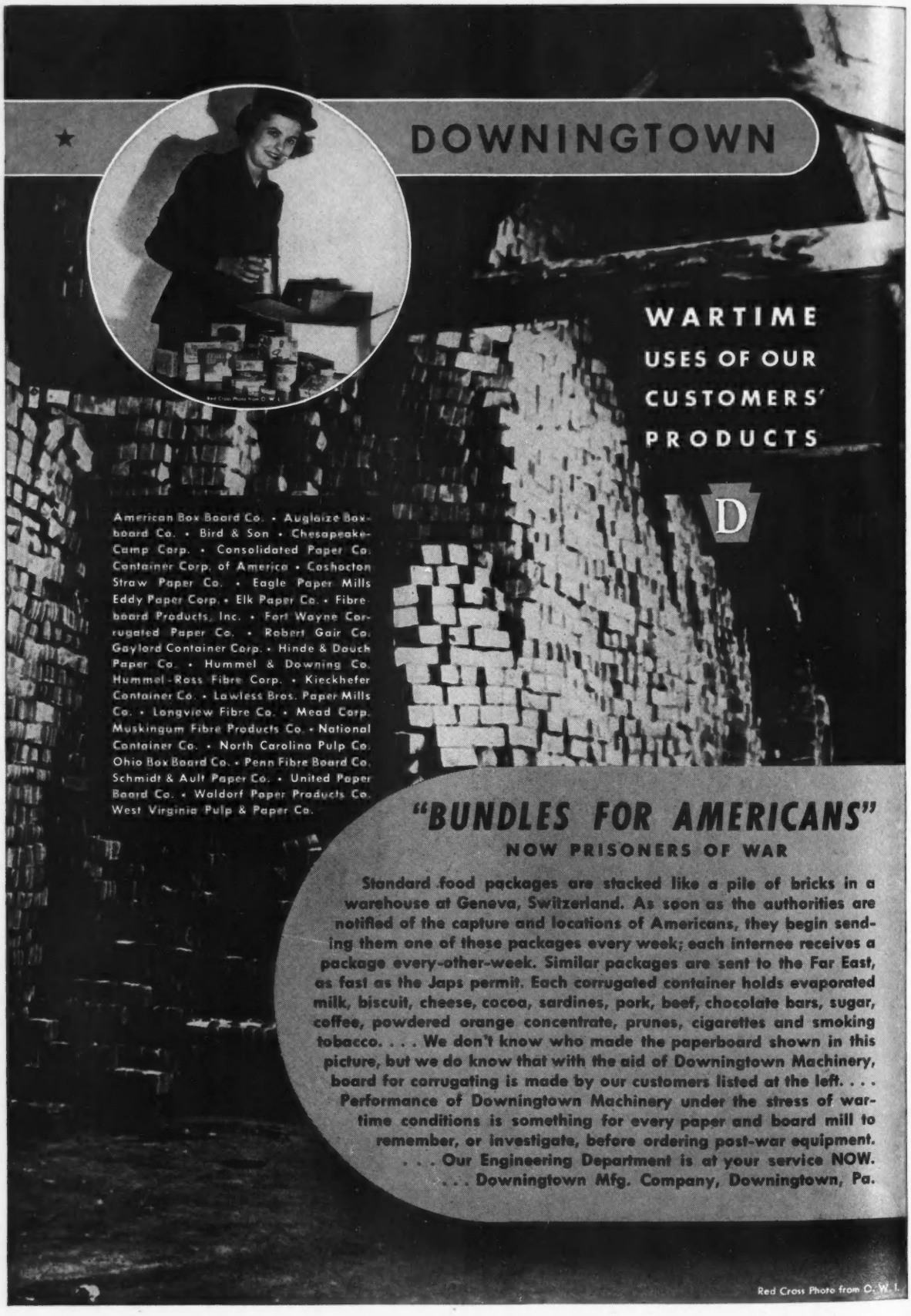
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NOW PRISONERS OF WAR
Standard food packages are stacked like a pile of bricks in a warehouse at Geneva, Switzerland. As soon as the authorities are notified of the capture and locations of Americans, they begin sending them one of these packages every week; each internee receives a package every-other-week. Similar packages are sent to the Far East, as fast as the Japs permit. Each corrugated container holds evaporated milk, biscuit, cheese, cocoa, sardines, pork, beef, chocolate bars, sugar, coffee, powdered orange concentrate, prunes, cigarettes and smoking tobacco. . . . We don't know who made the paperboard shown in this picture, but we do know that with the aid of Downingtown Machinery, board for corrugating is made by our customers listed at the left. . . . Performance of Downingtown Machinery under the stress of wartime conditions is something for every paper and board mill to remember, or investigate, before ordering post-war equipment. . . . Our Engineering Department is at your service NOW. . . . Downingtown Mfg. Company, Downingtown, Pa.
Red Cross Photo from O. W. I.

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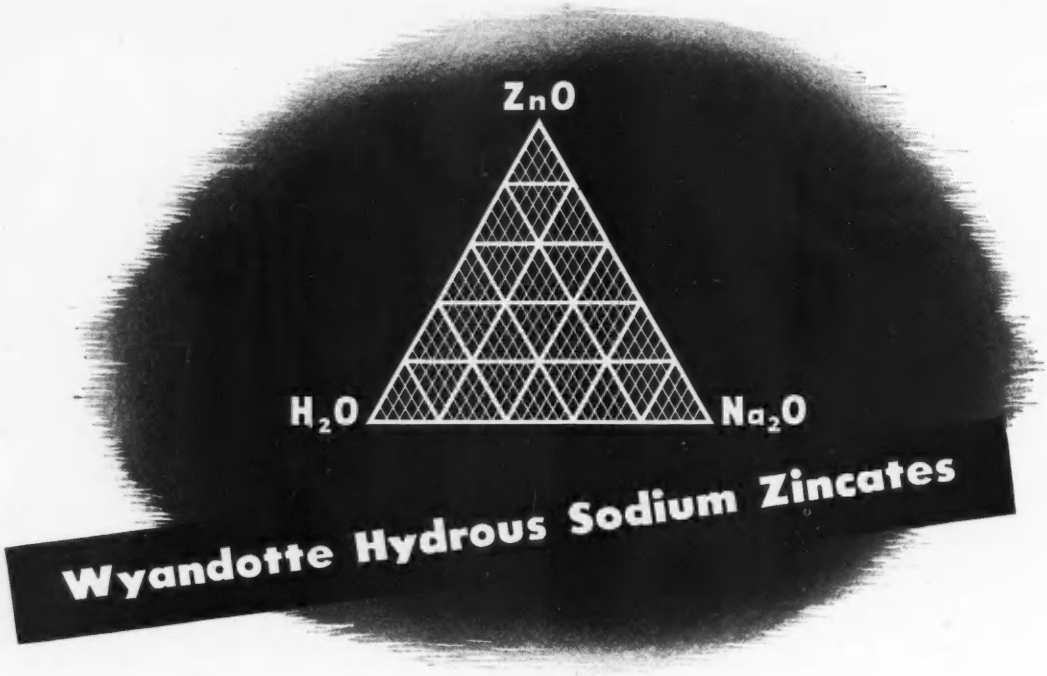

CHEMICALS WITH *U. C. P.

After years of research and development by Wyandotte, laboratory samples of the various hydrous sodium zincates are available and commercial quantities of several of the zincates can be made available for important uses. All of the hydrous sodium zincates are potentially available in large quantities. Chemicals of "undiscovered commercial potential," they have promise of immediate important commercial functions, such as:

- **Purification of water supplies.**
- **Boiler water treatment.**
- **Clarification of cannery and other industrial waste waters.**
- **Basis for colloidal suspensions of zinc oxide or zinc hydroxide.**
- **Source of zinc in zinc-plating operations.**

Wyandotte Chemicals' technical staff is always ready to talk over with you the properties and applications of hydrous sodium zincates. Users of alkalies may find it profitable to investigate the possible benefits of these chemicals in their processes.

**Undiscovered commercial potential.*

PROPERTIES OF HYDROUS SODIUM ZINCATES

CHARACTERISTICS: White to light gray or brown; flakes, granules or powder. The more alkaline zincates dissolve in water without decomposition but the less alkaline forms hydrolize to colloidal zinc hydroxide or oxide. All ratios may be dissolved without decomposition in suitable alkaline solutions. Solutions precipitate and flocculate traces of calcium, magnesium, iron and other metals from solution.

RANGE OF COMPOSITIONS: Na_2O: ZnO ratios from 100:1 to 2:1. Combined water content approximately ½ zinc oxide content by weight.

WYANDOTTE CHEMICALS CORPORATION • Michigan Alkali Division
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PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.

Vol. 118, No. 13 Thursday, March 30, 1944 Price Ten Cents

Joint Committee on Printing Makes Awards

Let Contracts For Furnishing the Government Printing Office At Washington, D. C., With Paper For the Three Months' Period Beginning April 1 — No Bids Received On Large Number of Items.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 27, 1944—The Joint Congressional Committee on Printing made awards today for paper for the use of the Government Printing Office for the three months period beginning April 1. When proposals were opened on March 20, no bids were received on Nos. 24, 27, 29, 41, 42, 43, 46, 49, 60, 62, 63, 65, 66, 67, 68, 69, 72, 75, 77, 84, 85, 120, 121, 122, 123, 125, 126, 128, 140, 141, 160, 161, 168, 169, 176, 177, 201, 202, 209, 211, 217, 218, 219, 252, 281, 304, 306, 307, 308, 309, 351, 360, and 367. The awards were as follows:

No. 1. Marquette Paper Corp., (ceiling price, 600,000 pounds).

No. 2. Bermingham & Prosser Co., 5.38 cents.

No. 3. Marquette Paper Corp., 7.98 cents.

No. 4. Walker Goulard Plehn Co., 7.70 cents (162,000 pounds); Barton, Duer & Koch Paper Co., 7.95 cents (338,000 pounds).

No. 5. Barton, Duer & Koch Paper Co., 7.95 cents.

No. 6. Perkins-Goodwin Co., 6.98 cents.

No. 7. Paper Corp. of U. S., 7.24 cents.

No. 8. Paper Corp. of U. S., 7.24 cents

No. 9. Barton, Duer & Koch Paper Co., 7.55 cents (400,000 pounds).

No. 10. Barton, Duer & Koch Paper Co., 7.40 cents.

No. 18. Willcox-Walter-Furlong Paper Co., 7.58 cents.

No. 19. R. P. Andrews Paper Company, 8.62 cents (600,000 pounds); North American Pulp & Paper Co., 7.80 cents (100,000 pounds); Paper Corp. of U. S., 8.69 cents (500,000 pounds); Central Ohio Paper Co., 8.52 cents (100,000 pounds); Aetna Paper Co., 8.68 cents (100,000 pounds).

No. 20. R. P. Andrews Paper Co., 7.56 cents (400,000 pounds); Aetna Paper Co., 7.56 cents (100,000 pounds).

No. 21. Whitaker Paper Co., 7.42 cents (400,000 pounds).

No. 22. Stanford Paper Co., 7.17 cents.

No. 23. Graham Paper Co., 8.67 cents.

No. 26. Whitaker Paper Co., 14.44 cents.

No. 33. Stanford Paper Co., 7.71 cents.

No. 34. R. P. Andrews Paper Co., 7.24 cents.

No. 37. Barton, Duer & Koch Paper Co., 6.32 cents.

No. 38. Barton, Duer & Koch Paper Co., 5.87 cents.

No. 39. Barton, Duer & Koch Paper Co., 6.55 cents.

No. 44. Old Dominion Paper Co., 5.6925 cents.

No. 45. R. P. Andrews Paper Co., 6.88 cents (400,000 pounds); Whitaker Paper Co., 6.91 cents (400,000 pounds).

No. 47. Aetna Paper Co., 9.37 cents.

No. 48. R. P. Andrews Paper Co., 12.83 cents.

No. 50. Barton, Duer & Koch Paper Co., 6.40 cents (400,000 pounds); Marquette Paper Corp., 6.40 cents (400,000 pounds).

No. 51. Barton, Duer & Koch Paper Co., 6.40 cents; Frank Parsons Paper Co., 6.40 cents (600,000 pounds).

No. 52. Mudge Paper Co., 6.55 cents (44,000 pounds); Bermingham & Prosser Co., 6.65 cents (100,000 pounds).

No. 55. Bulkley, Dunton & Co., 7.69 cents (500,000 pounds); Whitaker Paper Co., 7.69 cents (400,000 pounds); Marquette Paper Co., 7.85 cents (1,100,000 pounds).

No. 56. R. P. Andrews Paper Co., 7.23 cents (1,000,000 pounds); Barton, Duer & Koch Paper Co., 7.25 cents (1,000,000 pounds); Mudge Paper Co., 7.36 cents (500,000 pounds); Whitaker Paper Co., 7.44 cents (500,000 pounds).

No. 57. Whitaker Paper Co., 7.09 cents.

No. 58. R. P. Andrews Paper Co., 6.99 cents.

No. 59. Marquette Paper Corp., 8.54 cents (32 lb.); 8.09 cents (36 lb.).

No. 64. Barton, Duer & Koch Paper Co., 14.94 cents.

No. 71. North American Pulp & Paper Co., 11.50 cents (100,000 pounds); Graham Paper Co., 9.69 cents (200,000 pounds).

No. 73. Graham Paper Co., 10.19 cents.

No. 76. Barton, Duer & Koch Paper Co., 18.18 cents (150,000 pounds), 18.60 cents (50,000 pounds); Old Dominion Paper Co., 17.99 cents (50,000 pounds), 18.49 cents (50,000 pounds).

(Continued on page 21)

Groundwood Mill of Peavey Paper Mills Burns

Loss Is Estimated At More Than $100,000 By Harold Peavey, Vice-President of the Concern—Mill Will Be Rebuilt Soon—Kimberly-Clark Experimenting With Synthetic Rubber — Other Late News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., March 27, 1944—Loss estimated at more than $100,000 was caused Sunday, March 19, when the groundwood mill of the Peavey Paper Mills, Inc., at Rhinelander, Wis., was destroyed by fire. The estimate was made by Harold Peavey, vice-president.

The company immediately began to look for ground pulpwood from other sources, failing which the entire plant would be forced to shut down until the pulpwood grinding unit can be rebuilt. The Peavey plant manufactures sanitary tissues. Rebuilding operations will be launched as soon as possible.

The company employ about 120 persons, only a small number of them having worked at the ground pulpwood unit, which was located across the Flambeau river from the finishing and production units of the Peavey plant, which was not damaged.

The fire was caused by an overheated motor.

Kimberly-Clark Co. Interested in Rubber

Officials of Kimberly-Clark Corporation, Neenah, Wis., are showing considerable interest in experiments with synthetic rubber which have been conducted by the corporation's research department with some of its products. The exact nature of the experiments remains a secret.

It is emphasized that synthetic rubber offers many possibilities for the postwar era as well as during the present conflict. Synthetic rubber production as a military security measure, it is believed, will take care of possibly 150,000 to 200,000 tons a year, while the challenge and opportunity for industry to expand into new frontiers of production through the use of synthetic rubber, will take care of many more tons.

Corporation officials are not prepared to predict whether synthetic rubber will have an advantage over natural rubber, or vice versa, but they do believe a market will be available for 2,800,000 tons annually, more than twice as much as the whole world has ever used before.

Dismisses Suit Over Dam

The suit of the Wisconsin River Paper and Pulp Company, against the Wisconsin State Public Service Commission and the Whiting-Plover Paper Company, Stevens Point, Wis., over the latter company's operation of a Wisconsin river dam was dismissed March 20 by stipulation in circuit court at Wadison, Wis.

Judge Alvin C. Reis was informed by attorneys that the Wisconsin River company would start an injunction suit in Portage county court against Whiting-Plover, and would eliminate the commission as a defendant.

G. E. McCorison Returns to Sales Work

Guy E. McCorison, who resigned recently from his position as chief of the waterproof papers and gummed tape section of the War Production Board, has returned from Washington, D. C., to resume his duties as assistant sales manager of the Thilmany Pulp and Paper Company at Kaukauna, Wis. He is in charge of sales in the waterproof division.

WPB is retaining him as a consultant to the paper division, and he is subject to call to serve in an advisory capacity whenever special problems arise in connection with the use and manufacture of paper products for war purposes.

Thilmany Pulp and Paper Company was one of the three largest producers of waterproof papers in the United States in 1943. It has at present on order 32 carloads of waterproof paper for the Army Quartermaster Corps, most of which will be shipped overseas. The waterproof paper division is on a 100% war production basis.

NLBR Orders Mill Election

The National Labor Relations Board announced March 18 that it had ordered an election among workers of Kimberly-Clark Corporation, Neenah, Wis., to determine whether they desire to be represented by the International Brotherhood of Paper Makers and the International Brotherhood of Pulp, Sulphite and Paper Mill Workers jointly, or the Lakeview Independent Union, for purposes of collective bargaining, or by neither.

Thilmany Co. Presents High School Award

The Thilmany Pulp and Paper Company, Kaukauna, Wis., will present a $100 award on Class night to the outstanding boy or girl in the graduating class as Kaukauna High School. All seniors having an average of 87 or better will be eligible. Leadership, attitude, industry, personality will be the other factors.

Women Workers Meet For Election

The central committee of the Women in Production Service of the Lakeview mill of Kimberly-Clark Corporation, Neenah, Wis., last week drafted plans for election of representatives on all shifts in all departments to form an advisory group. The central committee, which includes five feminine workers from the mill proper and five from office personnel, will continue to hold weekly meetings, but the new advisory group will meet monthly.

S. F. Shattuck, executive vice president of Kimberly-Clark in charge of industrial relations, was a guest of the committee at its meeting.

One hundred fifteen Wips recently were promoted to junior lieutenants. The promotion means that they have not been absent for 60 days, have punched the clock for the same period, have records that show no accidents during the 60 days, and are buying war bonds to the extent of 10% of their wages.

To Distribute Continental Blacks

The Witco Chemical Company was recently appointed sole distributor of Continental blacks, manufactured by the Continental Carbon Company of Sunray, Texas.

Fine Papers Are in Tight Supply in Canada

Writing and Book Papers Now Scarce and Current Shortage Is Attributed To Sharp Increase In Paper Exports — Canadian Mills Supply Empire Countries While U. S. Ships To Latin America.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont,, March 27, 1944—White paper, particularly book and writing papers, are at present in very tight supply, despite all government measures intended to conserve the use of paper. The supply situation, in fact, has been so acute that mills have been unable to provide the full alloted tonnage to publications as permitted under the Wartime Prices and Trade Board publishing administrator under the reduced quotas that went into effect this year.

The fine paper mills are now circulating their customers, advising them of the critical supply situation, and enclosing an order from A. P. Jewett, administrator for book and writing papers, requiring them to establish quotas for all customers and distribute production available for Canadian consumption pro rata on basis of 1943 shipments.

Exceptions to the latest order are: Dominion government needs, school text books, certain casebound books and magazines and periodicals. In such cases the same yardage of paper will be allotted as last year, providing all feasible steps have been taken to use lighter paper.

Leading national magazines have already introduced considerable savings in the use of paper through adopting lighter weight stocks as against former weights of 42-pound and 48-pound stock.

Chief factor in the present imbalance between supply and demand is the sharp increase, under government direction, of fine paper exports. Currently about 20% of Canadian production is being exported, or twice as great a proportion of total output as last year.

Canadian Mills Supply Empire Countries

Canadian mills have been asked to provide for the white paper needs of certain Empire countries which have little or no facilities for such manufacture themselves. The countries being supplied by Canada include New Zealand, Australia, Ceylon, Rhodesia, the Middle East Command, and others. United States mills have assumed responsibility for meeting the paper requirements of Latin America and certain other areas. These allotments were made by the Combined Production and Resources Board at Washington.

Shortage Has Grown During Year

The squeeze on fine paper supply actually has been developing for over a year. The widening of uses of pulp products during the war, and the shortage of pulpwood, have been factors, and the new requirement for Canadian mills to increase their exports has aggravated an already difficult situation.

To meet demand, the fine paper mills in this country have been recently, and are now, running at practicable capacity. A year ago the mills were ordered to restrict operations to 90% of output in their base period (October, 1941 to March, 1942), but when the CPRB-sponsored export instructions were given the mills were permitted to step up operations to almost maximum levels. In practice, due to manpower difficulties, production is running slightly less than theoretical 24-capacity.

With fine paper supply available for domestic uses hardly 80% of theoretical capacity of the mills, pressure of demand has been increased. New uses include needs for the armed forces, and the government departments, which use such paper for ration books, legal forms, correspondence and other purposes. In addition, paper containers for milk and other foods have come into increasing use due to shortage of bottles. Paper is needed to package food shipped overseas.

Paper also is being used in place of scarce metals, such as tin, for containers.

As an instance of the scores of new demands on fine paper supply is the case of wrappings for bread. Bread consumption has jumped nearly 40% at a time when the Dominion government has been discouraging the sale of wrapped bread by the prohibition of all double wrappings and restricting the number of colors, etc. Numerous orders have been issued by the W.P.T.B. aimed at reducing domestic paper consumption. An important order was curtailment in tonnage allotted to magazines and periodicals. Such publications are operating on quotas which represent a considerable reduction in use from pre-war levels. Curtailment in fine paper for use in magazines has coincided with restrictions on use of newsprint by newspapers.

At the beginning of the war Printing and Publishing Administrator John Atkins issued an order virtually eliminating all non-essential printing, but the order was later modified to permit limited use of newsprint for commercial printing, since the newsprint supply was less acute than that of fine paper. Another order fixed a limit on basic weights of different types of paper. For instance, letterhead sulphite bond top weight was reduced to 16 pounds maximum weight for coated papers was reduced to 80 pounds, for super-calendered papers for magazines, etc., to 60 pounds.

There are also restrictions on the use of paper for converted paper products, such as envelopes, tags, greeting cards and similar products.

There is little prospect of an early easing of the present fine paper shortage, as mills now are operating at practicable capacity, and output of lighter weights tends to slow up production as measured in tons.

J. Porter To Be Sales Manager

I. L. Gartland, president, announces the appointment of Jermain Porter as sales manager of the D. M. Bare Paper Company at Roaring Spring, Pa.

Mr. Porter has spent thirty-five years in the industry, having been recently connected with the Union Bag and Paper Corporation, Brownville Board Company and the Hudson Valley Paper Company. His many friends wish him success.

Government Needs Limits Paper Supply

Chicago Reports Printing Paper Situation More Serious and Groundwood Lines Are Tighter — Waste Paper Salvage Not Up To Expectations — Salesmen To Hold "Baseball" Luncheon.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., March 27, 1944—Some slight improvement in mill receipts of pulpwood for the first month of the year were taken to mean here that there was a possibility for some betterment in the near future. The majority of the paper jobbers and sales representatives in the Chicago area, watching the backlog of orders pile up consistently, were more inclined to believe that things may actually get more critical before they get better.

Whispers that the salvage program and some "new angles" are combining to relieve the tensity were more or less discounted because of the belief that such plans were largely still "on paper."

Intensified Interest in Pulp

Locally, the allocation program has intensified interest in pulp and pulp alone. Mill representatives here have reported increasing pressure to go off of the commercial requirement almost 100% unless critical war orders were filled. The printing paper situation has grown into an acute stage while groundwood is now hard pressed, according to local reports, because of its use in almost every conceivable kind of government job. The local container group continued to report a growing tightness. Waste papers were getting some real stimulus from the widely publicized salvage program but even here the results were said to be not as good as expected.

View Baseball Film

The western division of the Salesmens Association of the Paper Industry will go "baseball" in a big way on April 3 when the American League Baseball Film, "Highlights of the 1943 Season" will be the movie attraction at the Sherman Hotel noon day luncheon. While Lew Fonseca, American League publicitor, will not be on hand, a capable substitute has been found to comment on the movies. The salesmen and a long list of special guests, are expected to get an early start on their enjoyment of the national pastime.

The association held only a round table discussion last week, talking over general conditions and discussing plans for the balance of the 1944 year. The division also approved a beautifully worded resolution covering the untimely accidental death of Mrs. Phil Howard, wife of the publisher of the American Paper Merchant.

Retailers Worried About Boxes

The Chicago Retail Merchants Association has asked its members to discuss with sources of supply the advantages of the present allotment system in the shipping container and corrugated box industries as compared to the new preference rating system. A statement issued this week reads as follows. "WPB's newest (P-146) assigns new preference ratings for fibre shipping containers, corrugated boxes and other types which use fibre board in whole or in part. Retailers are given AA5, the lowest and the least desirable rating. Clothing, specifically, is given AA3. Another order for folding and set-up boxes is in preparation. It probably means further reduction, and further curtailment is probably necessary and possible. But the time has come to secure for retailing some recognition of the fact that it has certain very necessary requirements (minimum) to be provided on a dependable basis. Such a basis should be the continuation of the present allotment system (even with percentages reduced) by authorizing a minimum allocation to retail normal supply sources on basis of tonnage or some other fair basis of measurement. It seems much better to have a small part of normal requirements on a fairly dependable schedule than to depend on the priority rating basis. We have already presented this view to the War Production Board. We hope that you, in turn, will discuss it with your sources of supply if you agree with our contention." It is understood that the Association is at present testing the tightness of the situation by a definite survey of source of supply action to current orders for items which are "retailing's stock in trade."

Safety Conference Planned

The 22nd Annual Midwest Safety Conference will be held at the Sherman Hotel, Chicago, on May 2, 3 and 4 and the general chairman of the conference, B. M. Livezey, has promised programs for April 1. A large number of paper mill representatives in the Wisconsin, Michigan and Illinois areas are always not only participants in the program but in attendance at the meetings. According to Mr. Livezey, the meeting promises to be "by far the most outstanding yet arranged."

Deny Stockholder Charge

Hector J. Dowd, president of the Certain-teed Product Corporation, this week issued a sweeping denial of charges brought against the present directors and management by R. G. Lizards a stockholder, in the latter's alleged effort to sweep out the board, headed by Bror G. Dahlberg, chairman. The statement by Mr. Down followed by one day the rejection of the Kings County supreme court in New York of a suit containing all the stockholders allegations. It also upheld Certain-teed and the Celotex Corporation of which Mr. Dahlberg is also the chairman.

E. A. Thrower to Purchasing Agt.

Emmett A. Thrower has been appointed purchasing agent for the P. P. Kellogg & Co. Division of the United States Envelope Company at Springfield, Mass. to succeed the late Paul L. Thayer who died on March 4, 1944.

Mr. Thrower has been with the Kellogg Division since December 1928 and for many years was associated with Mr. Thayer in the purchasing department at the Kellogg Division. He is a graduate of Worcester Polytechnic Institute and was first employed by the Deerfield Glassine Company at Monroe Bridge, Mass. He severed his connection there to come with the Kellogg Division.

Do your Postwar Plans include TAYLOR'S BEATER ROLL PRESSURE CONTROL SYSTEM?

HERE'S a paper mill success story worth repeating any time. How Taylor proved that beater roll *pressure*—not position or power input—is the best index of efficiency in the beating process and how we developed a Beater Roll Pressure Instrument that will give you the precise control that's necessary.

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ACCURACY FIRST

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Government Use of Paper

On the basis of stated requirements for the first quarter of 1944, all Federal Government agencies with the exception of the Army and Navy are using 1.2 percent of the country's total supply of paper and paperboard, states a report of March 24, issued by the Office of War Information. Requirements of the Army and Navy are not included in this section.

In October of 1943 the War Production Board and the Government Printing Office wrote each Federal Agency asking that it submit to GPO its total paper requirements for the first quarter of 1944. The letter from the Public Printer enclosed a form to be filled out by the agency giving a complete breakdown of its paper needs.

Because a number of the Government agencies contract outside the GPO for some of their paper and printing requirements, the GPO form called for ALL paper, printing, and paper board requirements. It stated: "The compilation will cover not only blank paper and printing ordered or requisitioned through the Government Printing Office but also all other printing, blank paper, and paper board procured from all other governmental and commercial sources."

Estimated First Quarter Use

The following table shows the estimated first quarter use of the different classes of paper and of paper board by all Government agencies and departments and the percentage of such use to the total first quarter supply in this country:

Paper	Total Domestic Supply (Est. Jan., 1944) Tons	Government Use	Percent Government Use of Total Supply
Wrapping	558,570	13,353	2.4
Book	344,196	10,647	3.1
Building	231,411	48	.02
Fine	222,534	26,144	11.7
Special Industrial	65,310	1,504	2.3
*Newsprint	819,000	2,241	.27
Groundwood	134,352	2,230	1.7
Sanitary	199,302	1,213	.6
Tissue	40,284	.5	.001
Absorbent	22,848	161	.7
Total Paper	2,637,807	57,541.5	2.2
*(Includes imports)			
Paperboard	2,197,704	1,330	.06
Total Paper and Paperboard	4,835,511	58,871.5	1.2

To ascertain how much writing and printing paper the Government uses, the Office of War Information asked the Government Printing Office to prepare a breakdown showing how much newsprint, groundwood, book paper and fine paper is used by each of the 65 Federal Agencies comprising the total. These types of paper include the paper used by all Government agencies (except the Army and Navy) for all of their correspondence, mimeographing, printing, posters, booklets and pamphlets, press releases—in short, their total paper needs. The breakdown includes all three branches of our Government: Executive, Legislative, and Judicial.

The GPO figures show that the Government agencies' writing and printing paper requirements for the first quarter of 1944 amount to 41,262.1 tons or 2.7 percent of the total supply as estimated in January, 1944.

The Treasury Department is highest with requirements of 12,585 tons, or .83 of 1 percent of the total supply. Office of Price Administration is second with requirements of 5,213. Others with requirements of 1,000 tons or more are: Agriculture 3,715; Post Office 3,277; Commerce 2,923; U. S. Maritime Commission and War Shipping Administration 1,492; Federal Security Agency 1,276; Veterans Administration 1,263; National War Agencies 1,151; and Congressional Work 1,136.2 (The figure for National War Agencies includes requirements for the following agencies: Board of War Communications, Central Administrative Services, Committee on Fair Employment Practices, Community War Services, Office of Defense Transportation, Office of Economic Stabilization, National War Labor Board, Office of Scientific Research and Development, Smaller War Plants Corporation, War Manpower Commission, Office of War Mobilization, War Relocation Authority.)

1. Newsprint. Newsprint requirements of the 65 Government agencies for the first quarter of this year are 2,240.7 tons, a fraction over one-fourth of one percent of the estimated total supply for the first quarter of 819,000 tons. Only three of the agencies use more than 100 tons: Treasury 1,223.7 tons, Congressional work 627.8 tons, and Post Office 125 tons.

2. Groundwood. The total groundwood requirements of the 65 agencies are 2,230.4 tons, 1.7 percent of the estimated total supply for its quarter of 134,196 tons. Treasury is highest with 1,301.6 tons. Four other agencies use more than 100 tons: Maritime 203, Commerce 190.7, Agriculture 158, and Post Office 128.

3. Book Papers. Total book paper required by all of the agencies are 10,647.5 tons, representing 3 percent of the essential total supply for the first quarter of 344,196 tons. Treasury is highest with 1,984.5 tons, Post Office following with 1,940. Other agencies with requirements above 100 tons are: Agriculture 1,036; Superintendent of Public Documents 740.4; Veterans Administration 635; Federal Security 608; Labor 539; Congressional Work 505.6; Office of War Information 442; Coordinator of Inter-American Affairs 378; OPA 358; Maritime 320; Commerce 227; and Selective Service 159.4.

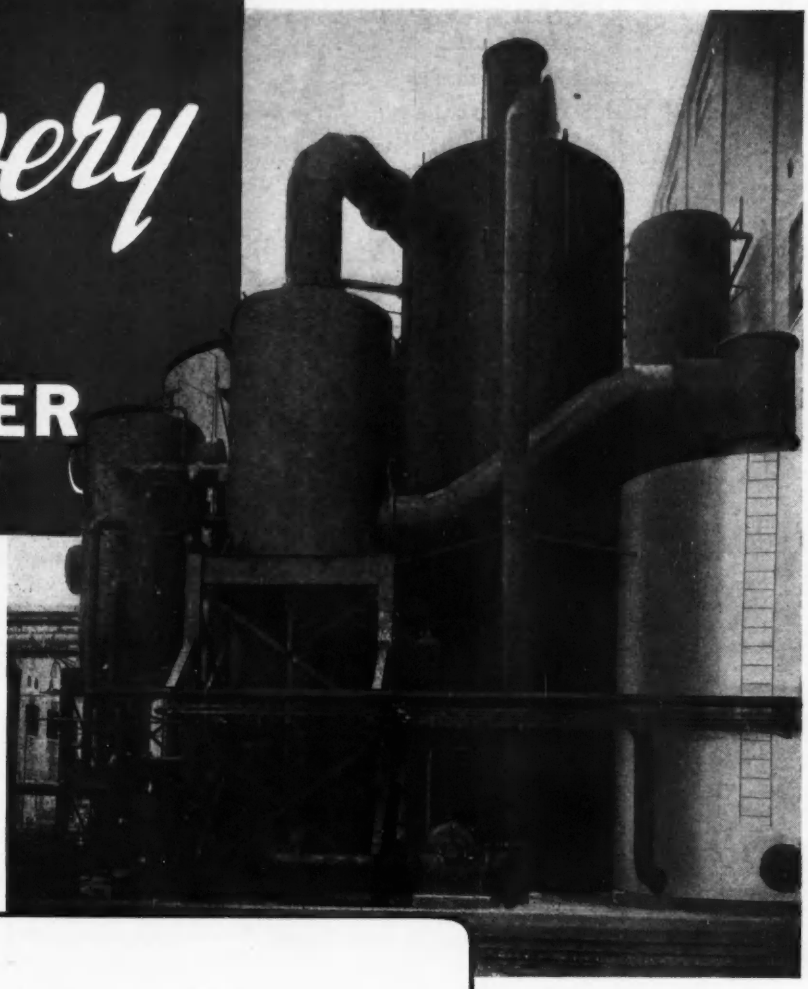
4. Fine papers. Fine paper requirements of the agencies total 26,143.5 tons, 11.7 percent of the estimated total supply during the first quarter of 222,534 tons. Treasury is highest with 8,074 tons. Other agencies whose requirements exceed 100 tons are: OPA 4,809; Agriculture 2,507; Commerce 2,505; National War Agencies 1,091.5; Post Office 1,084; Maritime 969; Justice 790.5; Veterans Administration 637; Federal Security 625; WPB 409; Selective Service 373.9; OWI 261.33; Government Coordinator of Inter-American Affairs 166; Superintendent of Documents 117.4.

Heavy War Uses

Heavy war uses of certain types of paper and paperboard are indicated by the following percentages representing Class I purchases of the total production.

	Percent
Bond and Writing (Fine Paper)	61.1
Asphalt and Creping (Coarse Paper)	72.6
Sanitary—Toweling	52.5
Container Board—V-Box Jute Liner	82.4
Container Board—Kraft Liner	85.8
Container Board—V-Box Chip Liner	82 7
Tube Stock	73.8
Map and Chart Paper (Fine Paper)	98 7
Mimeograph (Fine Paper)	71.0
Tabulating Cards (Special Industrial)	74.8
Resin Impregnated (Absorbent Paper)	62.5

Heat Recovery from PULP DIGESTER BLOW



Fuel Shortages

Fuel shortages, plus the prospect of higher fuel costs continuing after the war, emphasize the desirability of digester blow heat recovery for economical paper mill operation.

In the system, designed and constructed by Foster Wheeler, initial separation of pulp digesting liquor and steam is effected in a blow pit. The steam formed passes through a cyclone separator where the majority of the entrained pulp fibers are removed. The cyclone steam gives up its latent heat in a contact type condenser, water being supplied from a hot water accumulator tank.

Heat for the mill is transferred from the hot water in the accumulator tank through a two-stage flash system to clean wash water. Intermittent discharge of the digester steam is thus transformed to a continuous flow of hot water for mill processing.

This system, installed in a southern sulfate mill, serves seven 3150 cubic foot digesters and effects an annual net saving of $40,800; the recovery unit paid for itself in less than eight months' time.

FOSTER WHEELER CORPORATION
165 Broadway
New York 6, N. Y.

FOSTER WHEELER

Obituary

Johannes Andersen

Johannes Andersen, of 1120 Park avenue and Patchogue, L. I., president of J. Andersen & Co., importers of wood pulp, and president and chairman of the Pulp and Paper Trading Company, both at 21 East 40th street, New York, died March 27 in St. Clare's Hospital, after an illness of six months.

Mr. Andersen was born in Norway and would have been 77 years old on March 29. He came to Canada in 1882 and the following year came to New York as an associate of the Swedish-Norwegian Consulate.

Mr. Andersen started in the wood pulp importing business with the late Frederick Bertuch, in 1883, Mr.

JOHANNES ANDERSEN

Bertuch being a pioneer in the wood pulp industry. In 1904 Mr. Bertuch formed the Pulp and Paper Trading Company to handle pulp and paper in the domestic field. In 1909, Mr. Andersen became a partner in the firm of Frederick Bertuch Co., and this partnership continued until 1912, when Mr. Bertuch retired. At that time Mr. Andersen acquired Mr. Bertuch's interests in the Pulp and Paper Trading Company, became president and formed the J. Andersen & Co., in association with Morris Gintsler, who had been connected with The Frederick Bertuch Co., for 18 years prior to this date. Mr. Bertuch continued as a special partner of J. Andersen & Co. for 10 years.

The firm of J. Andersen & Co. represents in this country many of the important Swedish wood pulp concerns and through the Pulp and Paper Trading Company has associations of many years standing. Mr. Andersen's firm has represented the J. &. J. Rogers Co., Ausable Forks, N. Y., for 52 consecutive years.

Mr. Andersen was a former president and for twenty years was head of the board of trustees of the Norwegian Seamen's Church in Brooklyn and was vice-president of the Norwegian-American Chamber of Commerce. He held the Norwegian Order of St. Olaf.

Surviving are two sons, Erik Andersen of Larchmont, N. Y., and Capt. Rolf Andersen, Army Air Forces.

Funeral services were held at the Norwegian Seaman's Church, 33 First place, Brooklyn, N. Y. on March 30, and burial was in Woodlawn Cemetary.

John A. Limpert

John A. Limpert, aged 43, of Appleton, Wis., staff superintendent of the paper department of Kimberly-Clark Corporation, Neenah, Wis., died Tuesday evening, March 21, at Appleton after an illness of several months.

He was born August 21, 1900, in Appleton, and was graduated from the high school in that city. In July, 1920, he married Miss Olga Linstrom, at Niagara, Wis. An employe of Kimberly-Clark for 27 years, he served at Kimberly and Niagara, Wis., and at Niagara Falls, N. Y., returning from the latter city to become superintendent, a position he held 15 years, before being named staff superintendent.

He was a member of the First Methodist Church, Waverly Masonic lodge and United Commercial Travelers of America, all at Appleton, and of William Verhagen post of the American Legion at Kimberly, of which he was a past commander.

Surviving are the widow and five children: Joyce, Milwaukee; Jean, a student at Madison, Wis.; Marilyn and Shirley, at home, and Jackie, at home; a brother, George, and a sister, Mrs. Jake Moder, both of Appleton.

Charles H. Bell

Charles Henry Bell, who had been salesman for two years in the early thirties for Baird & Bartlett, Company, box board dealers, Boston, and had also been connected with the Davis Paper Company, West Hopkinton, N. H., dropped dead on the street near his home in Lancaster, Pa., February 21. Mr. Bell was a former resident of Melrose, Mass., for 23 years on Youle street.

At the age of 72 he had been enjoying fairly good health and at the time of his death was happy and busy, working about the grounds in anticipation of spring. Mr. Bell was born in Andover, Mass. His wife, Nellie S. Bell; a daughter, Marcia, wife of Samuel W. Menefee, Jr., and a son, Charles Eliot Bell of Highland Park, N. J., and three grandchildren are living.

Mr. Bell had been retired for five years, following a serious accident. He was beloved by all for his gracious manner, happy disposition and friendly nature, and was a valued neighbor.

Sigmund Wurf

Sigmund Wurf, 67, former Boston representative for the Great Northern Paper Company, died March 20 at his home, 109 El mHill avenue, Roxbury, Boston, Mass., after a long illness.

For the last 15 years and following his work for the paper company, he had been associated with the funeral supply business, was treasurer of the Economy Funeral Supply Company of Boston, and had operated the Boston Free Labor Agency. He was prominent in Masonic orders, being a life member of the Shrine, and was an original Scottish Rites member, joining in Scotland 40 years ago. He was a member of Mishkan Tefila, Roxbury, and the first

president of the men's club of the Crawford street synagogue.

His wife and two daughters, Mrs. Ella Firger and Mrs. Henriette Davidow, both of Roxbury, are living.

Erwin W. Kelley

Erwin W. Kelley, president of the Union Waxed Tissue Specialty Company, Hamberg, N. J. died of a heart attack on March 25. Mr. Kelley, who was well known in the industry, had been active in business up to the time of his death.

Mr. Kelley, previous to his connection with the Union Waxed Tissue Specialty Company, was mill manager with the Berst-Forster-Dixfield Co., Plattsburg, N. Y.

Chicago Group To Meet May 1

Dr. Otto Kress, technical director of the Institute of Paper Chemistry, Appleton, Wis., is to be the guest speaker at the May 1, 1944 dinner meeting of the Chicago Professional Paper Group. His subject is to be "Fundamentals of Pulping."

Dr. Kress has had a long affiliation with the pulp and paper industry. Among his several connections, previous to his affiliation with the Institute of Paper Chemistry at its inception in 1929, has been association with the U. S. Forest Products Laboratory as Chief of the Pulp and Paper Section, Consolidated Water Power and Paper Company as technical director, and Thilmany Pulp and Paper Company as superintendent of manufacture.

Dr. Kress has contributed widely to the literature of pulp and papermaking. He has numerous patents bearing his name. In 1940, he was the recipient of the TAPPI medal.

No meeting place has as yet been announced.

New Paper Mill Financing

The National Container Corporation has completed with Van Alstyne, Noel & Co. arrangements for public sale of $4,500,000 of 5 per cent fifteen-year sinking fund debentures due in 1959, it was announced Monday upon filing of a registration statement with the Securities and Exchange Commission.

National Container is a producer of kraft pulp, paperboard and corrugated and solid fiber containers. It recently acquired through a subsidiary the outstanding shares of the Bedford Pulp and Paper Company, Inc., of Big Island, Va., and its subsidiary, the Bedford Timber and Land Corporation, for $1,231,-298. The acquisition was financed in part through a loan of $1,000,000 from the Marine Midland Trust Company of New York.

Net proceeds from sale of the debentures will be applied to redemption of outstanding 5½ per cent debentures, the bank loan, notes or bonds and mortgages, aggregating $2,844,500, and to redeem first mortgage bonds and 5 per cent notes of Bedford Pulp at $556,000. The remainer will be used to reimburse the company for cash expended in acquiring the Bedford property and to increase working capital.

It is expected that public offering of the new securities will be made through a nation-wide banking syndicate early in April.

Goldman, Sachs & Co. and W. E. Hutton & Co. on Tuesday will offer 25,507 shares of Champion Paper and Fibre Company's 6 per cent cumulative preferred stock, $100 par value, at $109 a share. After this stock has been issued, all of the 115,000 authorized 6 per cent preferred shares will be outstanding. Net proceeds from the financing will be added to the company's working capital.

Champion Paper and Fibre, incorporated in 1893, manufacturers white and book papers as well as paper board. It has mills at Hamilton, Ohio; Canton, N. C., and Houston, Tex.

Michigan Div. To Have Coating Program

The next meeting of the Michigan Division of the American Pulp and Paper Mill Superintendents Association will be held on Thursday, April 13 at the Park-American Hotel in Kalamazoo. Dinner will be served at 6:30 P.M.

Frank Egan of the John Waldron Corporation of New Brunswick, N. J. will be the speaker of the evening. Mr. Egan announces that his subject will be; "Post War Plans of Conventional and Paper Machine Coating."

This meeting will be held on the second Thursday of the month, being held one week earlier than usual to avoid conflicting with the date of the spring meeting of the Northwestern Division of the American Pulp and Paper Mill Superintendents Association at Wausau, Wis. on April 21 and 22.

Arkell Co. Gets Army-Navy E

The officers and employees of the Arkell Safety Bag Company are proud to announce the award of the Army-Navy "E" for outstanding performance in war production.

The company has been supplying large quantities of waterproof papers for packing clothing, food, medical supplies, shock blankets, and vials of penicillin for overseas forces, and through the efforts of the organization collectively, notable service has been rendered to the Army and Navy.

The presentation of the award will take place Thursday, March 30, at 4:30 P.M., at the factory, 67 North 11th street, Brooklyn, New York. The award is to be made by Major R. B. Hamilton, Q. M. C., and Lt. Elisha T. Douglas, U. S. N.

Book Paper Securities and Prospects

The book paper industry, and the magazine publishing industry are discussed from the investor's point of view in the current market letter issued by Goodbody & Co., 115 Broadway, New York 6, N. Y.

The market letter gives short analyses of the investment position of leading book manufacturing concerns and comments on the prospects for the book paper industry in part as follows:

"If our premise proves correct, viz., that the volume of magazine as well as direct mail advertising is going to increase substantially after the war, then there is also going to be a corresponding increase in consumption of book paper, about 50% of which is used in printing magazines and most of the remainder for other kinds of commercial printing. Leading manufactureers of this type of paper should accordingly experience considerable impetus after current emergency restrictions have been removed; in fact, we are inclined to look for capacity operations during the early post-war years."

Smith Mills Developing New Plastic

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., March 27, 1944—Harold Crabtree, president of the Howard Smith Paper Mills, whose executive office is in Montreal, states that during the past year the company's research department has been active in the development of a new type of lignin plastic. While the project is still in the experimental stage, it appears to have promising postwar possibilities. In order to expedite its development, the directors have decided to proceed this year with the construction and installation of plant facilities necessary for producing the product in a marketable form.

Regarding the general operations of the mills, he says earnings have been adversely affected by further increases in the cost of pulpwood and other materials that occurred during the year. Wages also reached a higher level. This upward trend in costs is still evident and will continue to affect earnings as long as fixed ceiling prices for the company's finished products in the domestic market are maintained at present levels.

As to the pulpwood situation, which has been acute, he expressed the hope that the recent action of the Timber Administration in permitting an increase in the ceiling price of pulpwood may result in a greater supply of settlers' wood being available during the year 1944.

"The demand for all your company's products continues strong" he adds. "Certain restrictions imposed on our industry by the Pulp and Paper Administrators, in the general interest of the war, are limiting the output of your mills to some extent, but the position as regards production remains reasonably satisfactory."

Marathon Paper Co. Personnel

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., March 27, 1944.—While the Marathon Paper Company of Canada, Ltd., which is promoting a large new paper mill project in Canada is a separate entity, the parent company is the Marathon Company at Rothschild and Menasha, Wis., and is headed by D. C. Everest, as president; John Stevens, executive vice-president; Niles M. Anderson, vice-president in charge of townsite and operations; H. P. Klinestiver, vice-president in charge of timber operations; J. P. Johnson, secretary-treasurer; G. D. Ross, engineer; S. M. Hodder, architect.

The Canadian company will maintain offices at both Toronto and Port Arthur. Mr. Anderson and Mr. Ross have headquarters at the Toronto office, 320 Bay street; Mr. Klinestiver's office will be in the Public Utilities Building, Port Arthur, and Mr. Johnson will remain at Rothschild, Wis. The office of Mr. Hodder, the architect, is also at Port Arthur. The general contractors, Foundation Company of Ontario, have offices at 1158 Bay street, Toronto, under the management of L. J. McGowan.

Mr. Anderson is well known on the Western Coast and is a graduate in engineering from Washington University. He is also well known in British Columbia where he was identified with the pulp and paper industry and more recently was with St. Regis Paper Company, at Tacoma, Wash. Both Mr. Anderson and Mr. Ross are members of the American Society of Mechanical Engineers and have professional registration in Ontario.

Returns to Price & Pierce, Ltd.

After ten months of service with the Office of Price Administration in Washington as chief of the Industrial Papers Unit, William B. McGoldrick re-

WILLIAM B. MCGOLDRICK

turned to his old position as sales manager of the Paper Department of Price & Pierce, Ltd., New York pulp and paper mill agents, on March 1.

First Cartons in England

Lyndon B. Tewksbury, of the Spaulding & Tewksbury Company, Inc., 222 Summer Street, Boston, Mass., the oldest boxboard firm in New England, has received a letter from C. Youngman of Ihlee & Sankey, London, drawing attention to the fact that the first material for folding cartons in England came from the Spaulding & Tewksbury Company. To substantiate his assertion, Mr. Youngman encloses a copy of a letter by C. H. Foyle of Boxfoldia, Ltd., Bournebrook, Birmingham, in a recent issue of the *Paper Box and Bag Maker* reading in part as follows:

"It was a Mr. Bibby who was a shipping clerk at the National Folding Box and Paper Company of New Haven, who were exporting boxes to this country being sold by Shirley Cropper, who arranged with a J. W. Parmenter, a New York manufacturing milliner, to come to Great Britain with the necessary machinery to commence the manufacture of folding boxes. They set up in business at 7-8, Kirby Street, Hatton Garden, under the name of J. W. Parmenter & Co.

"The material used was coated manilla board that was sent over from the States in wooden cases by a firm called Spalding & Tewkesbury, Dutch strawboard purchased from Saunder & Knott, and Scandinavian wood pulp; most of this material was paste lined by hand, sheet by sheet, with M. G. paper. I even remember the name of the man who used to look after this lining—his name was Sykes.

Incidentally, the quality of the work turned out in those days, including the lithography, would compare quite favourably with some of the best work produced to-day.

Diamond Liquid Chlorine

Always uniform, dependable, pure—Diamond Liquid Chlorine comes to you in individual cylinders, multi-unit or single-unit tank cars, whichever best suits your requirements.

DIAMOND ALKALI COMPANY

PITTSBURGH, PA. AND EVERYWHERE

Issues Price Ruling on Fine Papers

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 29, 1944—Paper merchants in seven western states will determine their ceilings on 27 major classifications of fine papers and certain paper boards under a new regulation announced by the Office of Price Administration today.

This new regulation has been drawn up following an extensive survey of practices of the industry in the seven states affected, which are California, Oregon, Washington, Nevada, Idaho, Arizona and Utah. The other 41 states and the District of Columbia were put under a separate regulation which became effective July 5, 1943. OPA planned to bring the excluded seven states under the same regulation by amendment later, after a survey of those states. However, due to divergence of mark-up practice there, a new regulation exclusively for the seven states has been found more desirable.

Heretofore, merchant sales in these states of the fine papers and paper boards covered have been under the General Maximum Price Regulation, which "froze" individual sellers at their March 1942 "high." The new regulation will not change the general level of ceilings for these merchants.

A merchant will determine his ceiling price for any classification of paper under the new regulation by applying his mark-up in March 1942 to the manufacturer's base price for the same type of paper.

It will be necessary for all merchants handling the affected papers and paperboards in the seven western states to report in detail the percentage mark-ups that they employed in March 1942. These reports must be filed with OPA in Washington. Detailed instructions about filing the reports are given.

Retail prices will not be affected by any changes in merchant ceilings allowed by today's new regulation, OPA said. Purchasers of the products sold by these merchants are printers, publishers, converters, engravers, retailers, etc., whose prices for these items are under specific regulations or the General Maximum Price Regulation.

Covered by the regulation are: Coated blanks, plain blanks, blottings, board items, coated boards, plain boards, bogus bristols, bond papers, book papers, clay coated boxboard, bristols, plain and fancy cover papers, specialty cover papers, glazed papers, groundwood writing papers, gummed papers, ledger papers, safety manila, opaque circular, papeteries, plated papers, safety papers, tag board, text papers, thin papers, and wedding papers.

New Members of Bag Committee

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 29, 1944—The Office of Price Administration announced today that the following substitutions have been made in the Standard Grocery and Variety Bag Industry Advisory Committee.

A. R. Leiserson, American Paper Company, Richmond, Va., for E. B. Livy, Wortendyke Manufacturing Company, Richmond, Va. C. R. Kimball, Waltham Bag and Paper Company, Waltham, Mass. for J. E. Schorsch, Schorsch & Company, Inc., 120 Eastern Boulevard, New York City. Wayne Brown, Crown Zellerbach Corporation, 122 East 42nd street, New York City, for H. O. Nichols, Crown Zellerbach Corporation, 122 East 42nd street, New York City.

Paper Production for January

The following data cover all known mills and represent a continuation of the monthly statistics initiated in "Facts for Industry," series 24-2-1. For annual data and a description of the statistics, "Facts for Industry," series 24-1-2 should be consulted. All inquiries concerning these data should be addressed to the Bureau of the Census, Washington 25, D. C.

(Ton of 2,000 pounds)

Type of paper	January 1944 [1]	1943 December	1943 January
All types	1,413,365	1,361,485	1,375,076
Newsprint	60,101	63,962	70,340
Groundwood papers	50,442	49,817	49,573
Printing	18,412	17,712 [2]	14,347 [2]
Specialties	32,030	32,105 [2]	35,226 [2]
Book papers	123,005	125,236	134,982
General printing	88,317	91,058 [2]	98,579 [2]
Converting papers	34,619	33,929	35,716
Other book papers	69	249 [2]	687 [2]
Fine papers	78,313	78,493	85,688
Writing papers	57,007	57,214 [2]	63,647 [2]
Cover and text	4,780	3,987	3,989
Reproduction	4,017	3,959 [2]	4,090 [2]
Bristols [3]	7,841	8,536 [2]	8,985 [2]
Thin papers	4,473	4,311	4,553
Other fine papers	195	486	424
Wrapping papers	172,174	159,286	171,695
Bag papers	39,902	38,069	50,899
Glassine	6,688	6,845	6,512
Greaseproof	2,623	2,460	1,851
Vegetable parchment	2,730	2,648	2,650
Converting papers	67,273	56,524 [2,4]	48,679 [2,4]
Wrapping papers	52,958	52,740 [2,4]	61,104 [2,4]
Multi-wall sack papers	28,812	29,869	18,684
Special industrial papers	18,610	15,344	16,544
Sanitary papers	67,857	62,520	69,304
Tissue papers	13,739	12,368	13,214
Absorbent papers	7,821	8,107	6,230
Building papers	72,132	71,266	74,377
Paperboard	720,359	685,211	664,437
Container board	344,834	331,629	304,628
Folding boxboard	160,847	156,527	155,133
Set-up boxboard	56,755	61,285	73,418
Cardboard	5,008	5,145	5,211
Building board	92,324	81,813	88,979
Miscellaneous other board	60,591	48,812	37,068
Tube stock	41,631	29,622	22,351

[1] Preliminary.

[2] Data revised to conform with certain changes in paper and paperboard classifications, which became effective beginning January, 1944. Revised figures for other months in 1943 and for 1942, will be published at a later date.

[3] Includes Government Postal Card stock, reported under "Other Book Papers" in previous releases in this series.

[4] Includes a small quantity of Special Industrial Papers having a basis weight of less than 100 pounds. Such paper was classified as Wrapping Paper prior to January, 1944.

Pulpwood Receipts Up 8 Per cent

Deliveries of domestic pulpwood to mills during February were 1,312,000 cords, according to Pulpwood Consuming Industries, representing an increase of almost 8% over January, and more than 24% above receipts of the corresponding month last year. It is pointed out, however, that the figures are a long way from the 14,000,000-cord goal set by WPB for 1944. January, 1944, deliveries were 1,216,128 cords, and those for February, 1943, were 1,055,000 cords.

The war activities committee of the association warns that pulpwood production must continue to improve during the present cutting season if the WPB goal is to be met and military and essential civilian requirements fulfilled.

Tayloe Made Major in Army Air Corps

The Tayloe Paper Company, 420-424 South Front street, Memphis, Tenn., announces that word has just been received that Howard Tayloe, executive vice president of the Tayloe Paper Company of Memphis, has been made a Major in the Army Air Corps. Major Tayloe is stationed near Dayton, Ohio at Patterson Field, Fairfield, Ohio.

JOINT COMMITTEE ON PRINTING MAKES AWARDS

(Continued from page 7)

No. 78. Barton, Duer & Koch Paper Co., 18.85 cents (30,000 pounds); Old Dominion Paper Co., 18.74 cents (50,000 pounds), 18.49 cents (50,000 pounds).

No. 101. Eastern Corp., 11.46 cents (100,000 pounds); Aetna Paper Co., 10.43 cents (100,000 pounds).

No. 102. Eastern Corp., 9.31 cents.

No. 103. Eastern Corp., 10.04 cents.

No. 104. Aetna Paper Co., 11.31 cents

No. 105. Aetna Paper Co., 15.37 cents.

No. 106. Aetna Paper Co., 13.36 cents.

No. 107. Aetna Paper Co., 13.37 cents.

No. 108. Aetna Paper Co., 13.67 cents.

No. 109. Aetna Paper Co., 17.47 cents.

No. 110. Aetna Paper Co., 13.77 cents.

No. 111. Aetna Paper Co., 13.77 cents.

No. 151. Eastern Corp., 9.60 cents (150,000 pounds); Aetna Paper Co., 9.60 cents (100,000 pounds).

No. 152. Willcox-Walter-Furlong Paper Co., 8.28 cents.

No. 153. Willcox-Walter-Furlong Paper Co., 7.78 cents.

No. 154. Aetna Paper Co., 13.47 cents.

No. 155. Aetna Paper Co., 13.47 cents.

No. 156. Aetna Paper Co., 14.27 cents.

No. 183. Frank Parsons Paper Co., 6.79 cents.

No. 184. Willcox-Walter-Furlong Paper Co., 7.99 cents (300,000 pounds); Whitaker Paper Co., 7.67 cents (200,000 pounds).

No. 185. Willcox-Walter-Furlong Paper Co., 8.49 cents.

No. 189. Barton, Duer & Koch Paper Co., 11.80 cents.

No. 190. Barton, Duer & Koch Paper Co., 13.35 cents.

No. 191. Barton, Duer & Koch Paper Co., 13.95 cents.

No. 192. Barton, Duer & Koch Paper Co., 12.30 cents.

No. 195. Barton, Duer & Koch Paper Co., 20.20 cents.

No. 196. Barton, Duer & Koch Paper Co., 20.00 cents.

No. 203. R. P. Andrews Paper Co., 8.74 cents.

No. 205. R. P. Andrews Paper Co., 13.13 cents.

No. 208. Frank Parsons Paper Co., 5.25 cents.

No. 210. Whitaker Paper Co., 5.875 cents (4¾" rolls), 5.625 cents (5¾ and 7¼" rolls).

No. 213. Perkins-Goodwin Co., 18.00 cents (160 lb.), 17.00 cents (280 lb.).

No. 254. Mathers-Lamm Paper Co., 9.00 cents.

No. 255. Central Ohio Paper Co., 9.50 cents.

No. 265. Paper Corp. of U. S., 9.50 cents.

No. 271. Perkins-Goodwin Co., 9.25 cents.

No. 276. Barton, Duer & Koch Paper Co., 8.50 cents.

No. 277. Barton, Duer & Koch Paper Co., 9.50 cents.

No. 280. Mudge Paper Co., 11.25 cents.

No. 302. Barton, Duer & Koch Paper Co., $34.38.

No. 303. Barton, Duer & Koch Paper Co., $49.02 per M sheets.

No. 305. Barton, Duer & Koch Paper Co., $42.79 per M sheets.

No. 325. Whitaker Paper Co., 5.91 cents (800,000 pounds).

No. 326. R. P. Andrews Paper Co., 5.97 cents (400,000 pounds); Whitaker Paper Co., 6.01 cents (400,000 pounds).

No. 327. R. P. Andrews Paper Co., 5.97 cents. (800,000 pounds).

No. 352. Barton, Duer & Koch Paper Co., 18.85 cents.

No. 366. Mathers-Lamm Paper Co., 4.165 cents.

No. 368. Consolidated Paper Co., 5.87 cents.

To Be Forest Manager for M. & O.

George B. Amidon, associate forest economist with the Lake States experiment station at University Farm, has been placed in charge of forest management by Minnesota and Ontario Paper Company.

Mr. Amidon has been with the U. S. Forest Service for the past two years. Previously he spent five years with the Mennesota State Division of Forestry. Born at Houston, Minn., he was graduated from the University of Minnesota forestry college in 1936. While with the State Forestry Division he served at Park Rapids, Deer River and Big Falls.

Forest management is a new department created by Minnesota and Ontario Paper Company and Mr. Amidon will work out of the firm's Minneapolis office.

Employes Magazine

One of the most popular mediums employed to tell employees about the company and its problems is the employee magazine, according to a survey of over 500 companies conducted by the Policyholders Service Bureau of the Metropolitan Life Insurance Company. The methods and media used to build better employee relations and an alert, loyal personnel are reviewed in the Bureau's recently issued report, "Telling Employees About Their Company."

Included among the media used are special employee magazine inserts, pamphlets and leaflets, letters to employees, interim reports on operation, charts and posters, illustrations, newspaper statements, courses for employees and employee meetings and contests.

Pamphlets and leaflets are used to supplement employee magazine material and interim reports are issued as a supplement to the annual report to reawaken interest in and to foster understanding of financial statements. A lists of companies issuing interim reports is given in the appendix.

In addition to illustrations of the various types of media and their uses, the last section of the study outlines the complete employee information programs of several companies. A copy of "Telling Employees About Their Company" is available to those executives who address the Bureau on their business stationery. Address: Policyholders Service Bureau, Metropolitan Life Insurance Company, 1 Madison avenue, New York, 10, N. Y.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending March 25, 1944

STOCKS

	High	Low	Last
A. P. W.	3	2⅝	3
Armstrong Cork Co.	38	37¾	37¾
Celotex Corp.	12¼	11½	12
Celotex Corp., pf.	18	17½	17½
Certain-Teed Products Corp.	5¾	5½	5⅝
Certain-Teed Products Corp., pf.	63½	61	62¾
Champion Paper & Fibre Co.	25¾	25	25
Champion Paper & Fibre Co., pf.	110	109¼	109¼
Congoleum Nairn Co.	24¼	23⅞	24
Container Corp. of America	23⅜	23	23¼
Continental-Diamond Fibre Co.	12⅞	12	12⅜
Crown-Zellerbach Co.	17⅜	17	17
Crown-Zellerbach Co., pf.	99½	98½	98½
Dixie Cup Co.	16⅝	16	16
Dixie Cup Co.—A.	44⅝	44¼	44¼
Flintkote Co.	23¾	22½	22⅝
Flintkote Co., pf.	107	107	107
Robert Gair	3⅞	3½	3½
Robert Gair, pf.	14⅞	14¾	14⅞
International Paper Co.	15⅝	15	15
International Paper Co., pf.	75⅛	74	74½
Johns-Manville Corp.	93	90½	90¾
Johns-Manville Corp., pf.	121⅛	121⅛	121⅛
Kimberly-Clark Corp.	34	34	34
MacAndrews & Forbes	27	26½	26½
MacAndrews & Forbes, pf.	....	....	....
Masonite Corp.	39¼	38½	38½
Mead Corp.	9¾	9⅜	9⅜
Mead Corp., pf. A—6%	....	....	....
Mead Corp., pf. B—5½%	81	78	78
National Container Corp.	14¾	14	14¼
Paraffine Companies, Inc.	49	48½	48½
Paraffine Companies, Inc., pf.	105	105	105
Rayonier, Inc.	15	14⅝	15
Rayonier, Inc., pf.	30	29½	30
Ruberoid Co.	29⅛	29	29
Scott Paper Co.	39½	39	39½
Scott Paper Co., pf.	108¾	108¾	108¾
Sutherland Paper Co.	31	30⅛	31
Union Bag & Paper Corp.	10¾	10⅜	10⅝
United Paperboard Co.	5¼	5⅛	5⅛
U. S. Gypsum Co.	72	70½	70½
U. S. Gypsum Co., pf.	....	....	....
West Virginia Pulp & Paper Co.	19	18⅝	19
West Virginia Pulp & Paper Co., pf.	....	....	....

BONDS

Abitibi Pulp & Paper Co., 5s '53	71⅞	71⅜	71½
Celotex Corp. 3¾s '55	103⅝	103⅝	103⅝
Certain-Teed Products Corp. 5½s '48	101	100½	100½
Champion Paper & Fibre Co. 4¾s '50	....	....	....
International Paper Co. 6s '55	105⅞	105	105¾
International Paper Co. 5s '47	104¼	104	104¼
Mead Corp. 3¾s '53	....	....	....
West Virginia Pulp & Paper Co. 3s '54	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending March 25, 1944

STOCKS

	High	Low	Last
Great Northern Paper Co.	33⅛	33	33
Hummel-Ross Fibre Corp.	5¼	5¼	5¼
St. Regis Paper Co.	4⅞	4⅝	4⅝
St. Regis Paper Co., pf.	153	148	152
Taggart Corp.	5¼	5⅛	5¼

BONDS

American Writing Paper Co. 6s '61	100¼	100	100¼

National Container Profits Up

The National Container Corporation—for 1943 reports indicated net profit, after $75,000 reserve for renegotiation, was $816,997, or $2.47 a share, compared with $654,833, or $1.98 a share, the year before; sales rose to new high of $12,968,778 from $8,914,027 in 1942. Renegotiation of war contracts has been settled for 1942 by payment of $29,450, which has been deducted from surplus in 1943 report.

River Raisin Earns Less

The River Raisin Paper Company for 1943 reports a net income of $213,886, or 46 cents a share, against $142,285, or 31 cents a share, for 1942.

Rolland Co. Profits Lower

Jean Rolland, president of the Rolland Paper Company of Montreal, in presenting the annual report of the company for 1943 states that while there was a moderate improvement in operating profit the year's net was lower in reflection of increased provision for income and excess profits taxes, the result being net profits of $52,898 as compared with $104,802 in 1942. On the preferred shares the year's net, inclusive of the refundable portion of the excess profits tax, worked out at $10.19 per preferred share vs. $10.98 for 1942.

While there has been a substantial improvement on the companies sales (the company manufactures bond and fine papers generally), Mr. Rolland said that recent increases in wages granted labor, together with steadily rising costs of pulp, coal and other supplies will definitely result in higher manufacturing costs during 1944. Thus, unless the prices of finished papers are advanced, a reduction in net profit for the year 1944 can be anticipated.

M. & O. Earnings Up

The Minnesota and Ontario Paper Company and subsidiary companies, wholly owned directly or indirectly in United States and Canada, showed consolidated net income for 1943 of $1,463,806 after provision for income taxes, as compared with $1,616,863 for 1942, in the annual report of the company for last year, released by R. H. M. Robinson, president.

Of the 1943 net income, $65,351 represented gain on purchase by the company of its income mortgage bonds. Provision for income taxes was $999,851 last year, compared with $1,834,150 in 1942, which latter figure included $450,000 provision for contingencies.

Champion Co. Files with SEC

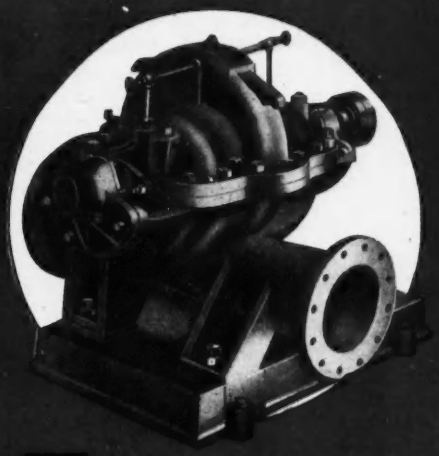
The Champion Paper and Fibre Company of Hamilton, Ohio, filed with the Securities and Exchange Commission last week a registration statement covering the proposed issuance and sale of 25,507 shares of its 6 per cent cumulative preferred stock, par value $100 a share.

Goldman, Sachs & Co. and W. E. Hutton & Co. are the underwriters for the entire issue, the net proceeds from which will be used for capital expenditures. It is expected these may include moving certain facilities to either Houston, Tex., or Canton, N. C.

Howard Smith Mills Nets $1.67

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., March 27, 1944—The annual report of Howard Smith Paper Mills for 1943, shows that although consolidated net sales were practically equal to those of the previous year, net profit was $988,261, as compared with $1,134,096 in 1942, equal, after preferred dividends, to $1.67 per common share, against $2.11. The balance sheet shows a strong position, with cash and government bonds totalling $2,-



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OF HYDRAULIC ENGINEERING

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LOMBARD GOVERNOR CORPORATION

MAIN STREET, ASHLAND, MASSACHUSETTS

Sales office: 60 E. 42nd Street, New York 17, N. Y.

645,000 and net working capital at $6,584,000. During the year the company reduced its own funded debt by $350,000, that of its subsidiary, Canada Paper, by $125,000, and cut its own bank loan $898,000 a total reduction in banking and bonded indebtedness of $1,373,000. Capital expenditures during 1943 amounted to $437,714.

Champion Profits Lower

The Champion Paper and Fibre Company and subsidiaries for the twelve weeks to January 30 reports a consolidated net income of $325,388, equaled 36 cents a common share, compared with $478,802, or 64 cents a common share, for 12 weeks to January 30, 1943. Forty weeks to January 30: Net, $1,523,609, or $2.02 a common share, compared with $2,088,486, or $3.04 a share, for 40 weeks to January 30, 1943.

Price Bros. Declares Dividend

The Price Brothers and Company have declared a dividend of $1.50 per share, payable May 1. This is the first dividend on the present common stock. The company's capital was reorganized in 1937. The common stock has been active and strong recently, and yesterday it touched 24¾, highest since 1937, up 5¾ over the 1944 low and 15½ points above the 1943 low.

Eddy Co. Profits Up

The Eddy Paper Corporation for 1942 reports a net income of $591,613, or $3.60 a share, including postwar refund, against $475,408, or $2.57 a share, for 1942; net sales, $14,369,391, against $13,257,112.

B. G. Dahlberg Cleared By Court

Bror G. Dahlberg, chairman of the boards of the Certain-teed Products Corporation and the Celotex Corporation, received a clean bill of health last week in the 120-page report filed in the Supreme Court in Brooklyn by John P. McGrath, referee in a stockholders' suit against those two companies, the Phoenix Securities Corporation and twenty-six individuals.

The action brought by Joseph Kalmanash and others, alleged that a contract that gave Celotex access to Certain-teed's excess plant facilities had not been negotiated honestly and should be canceled. The referee found that the contract had benefited both parties.

"The evidence has failed to support the charge. Yet I am not content to hold merely that such proof is lacking. I think that the charge is a reprehensible one and I have conscientiously searched the record to ascertain if there is anything at all which would suggest even an inclination on Dahlberg's part to favor Celotex at the expense of Certain-teed. In my opinion Dahlberg is entitled to a clearcut finding that the record contains no such suggestion * * * "

Charges by the Kalmanash group that Certain-teed executives had received too much pay were set aside. The report declared that the company's ten-year loss of $8,641,000 up to 1938 had been transformed into a five-year gain of $3,904,000 thereafter and that the responsible executives were "deserving of liberal compensation in view of the results obtained."

The referee praised the disputed sale of the stock of a subsidiary, the Sloane-Blabon Corporation, at an alleged loss of $392,715, as a sagacious transaction resulting in reduced taxes.

KEEP IT ON THE WIRE WITH SHALLCROSS RETENTION SYSTEM

A new process by which pulp, starch and other materials, including wet strength resins are kept on the wire.

KAL-AMYLOX—

a perfect balance of Amylox and Kalox, two Kali chemicals, is used in this process, effecting marked economies in operating and finishing, with no degradation of the paper and invariable improvement of formation.

NO ROYALTIES TO PAY

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In a beaker, take some liquid from the tray water from your machine. Into it put a small amount of KAL-AMYLOX.

Notice how the coagulation occurs and how materials now being lost are precipitated in the beaker.

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Atwood Paper Co. Sold

The Industrial Paper and Cordage Company of Pawtucket, R. I. purchased the Atwood Paper Company, 284 Montello street, Brockton, Mass. The interesting history of an old New England paper merchant is brought to light by this transaction.

The F. H. Fearing Company was started in Brockton, in 1887 as a merchant authorized to sell paper and sundry products. It was operated as such until January, 1905 when F. H. Fearing sold his company to the employees. These employees, headed by W. S. Atwood, A. D. Leonard and George E. MacDuff, incorporated the company as the Atwood Paper Company in February, 1905.

During the operations of this old company, W. S. Atwood retired leaving A. D. Leonard and G. E. MacDuff as the owners. In 1912 Miss E. M. Phillips, the present clerk of the corporation, joined the Atwood Paper Company. A year later in 1913 Joseph H. Shurtleff, the present manager, became associated with this company. After Mr. MacDuff's death on December 24, 1939 A. D. Leonard, J. M. Shurtleff and Miss E. M. Phillips became the owners of this company.

Mr. Leonard's poor health and the desire of Mr. Shurtleff to retire were the reasons for the sale to a younger and growing company.

The Industrial Paper and Cordage Company, through its treasurer and general manager, J. C Campbell, states that the company will operate as the Atwood Paper Company. It will become a division of the Industrial Paper and Cordage Company.

The new officers of the Atwood Paper Company are Joseph M. Shurtleff, treasurer and general manager, assisted by Henry W. Clark, assistant treasurer and assistant manager, who will take Mr. Shurtleff's place when the latter retires.

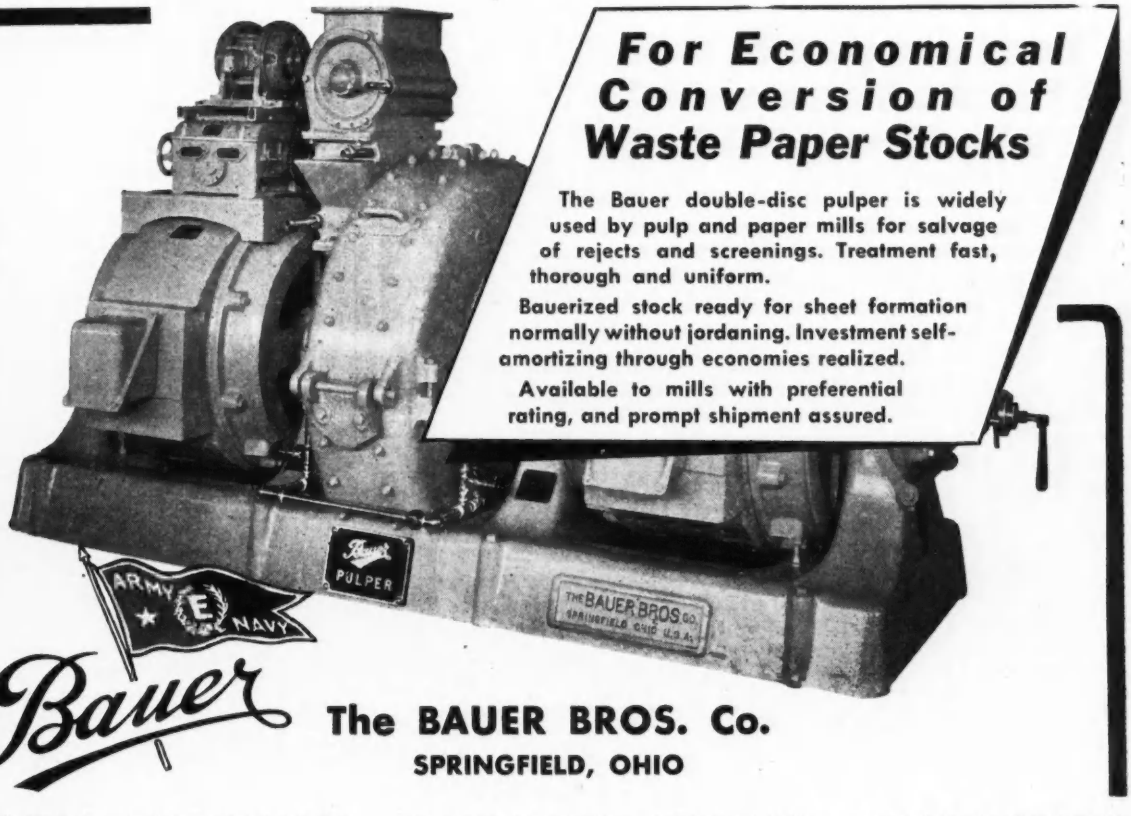
Mr. Clark is one of two men of the Industrial Paper and Cordage Company who has been promoted. He has had experience as warehouse foreman, office manager and salesman. In 1942 he was brought back into the office as priority clerk and assistant treasurer of the Industrial Paper and Cordage Company.

Erwin MacDonald, a salesman in the Brockton area for the Industrial Paper and Cordage Company, will become associated with the Atwood Paper Company as vice-president, and in charge of industrial sales, which position is also a promotion for Mr. MacDonald. J. C. Campbell will be the president of the Atwood Paper Company, replacing A. D. Leonard.

The management of the Industrial Paper and Cordage Company is pleased to help keep the Atwood Paper Company in operation. They also are proud to become associated with a 57-year-old paper house. The new owners look forward to continued success for the Atwood Paper Company.

Correction

Johns-Manville Sales Corporation writes:—"In the article entitled 'Diatomaceous Silica in Paper' by R. G. Quinn and C. J. O'Neil, on page 12 of the issue of the PAPER TRADE JOURNAL of March 2, 1944 an error has been called to our attention about the positioning of one of the photographs. The one we refer to shows two circular fields of Celite material and 5 individual diatom shapes. To make it correct for the caption furnished, this photograph should be reproduced with the two elongated shapes above the circles rather than below."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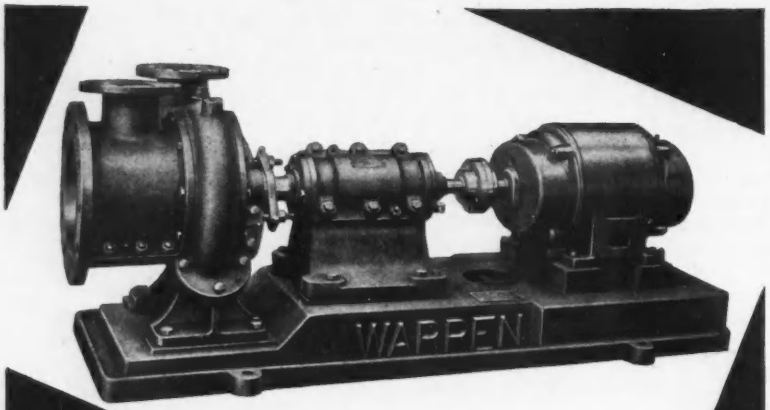
AVOID ALL WASTE • BACK THE ATTACK • BUY BONDS



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TOLERANCE
ON 9 POUND ALL RAG STOCK

. . . met successfully with a
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That's a record. From a full to empty chest, a variation of 12 feet, the output of this Warren Pump* was so steady that required tolerance was easily and consistently met. And the sheet was more uniform than obtained with the plunger pump previously used. Records like this are not exceptional. All Warren machine chest pump installations have been notably successful.

* Installation in a large Eastern mill.

WARREN PUMPS
WARREN STEAM PUMP CO., INC., WARREN, MASS.

Government Paper Awards

WASHINGTON, D. C., March 29, 1944—Collings Manufacturing Company has been awarded the contract for furnishing the Government Printing Office with 50,000 pounds of white ledger paper at $15.12 per cwt. Other paper awards recently announced by the Printing Office for paper purchased on the open market include the following.

Walker Goulard Plehn Company, Inc., 36,260 pounds of green G. W. writing paper at 7.15 cents and R. P. Andrews Paper Company will furnish 200,000 pounds of white sulphite paper at 7.61 cents. International Paper Company will furnish 50,000 pounds of white index paper at 6.17 cents and Barton, Duer & Koch Paper Company will furnish 32,325 pounds of fawn index paper at 16.73 cents. Stanford Paper Company will furnish 5,600 pounds of white book paper at 12.4 cents.

Paper Corporation of U. S. will furnish 1,235,249 pounds of tan bristol board at 9.9 cents and the Clifton Paper Board Sales Company will furnish 88,000 pounds of newsboard at $53.00 per ton. Bird & Son will furnish 5,000 sheets of gray pressboard at $18.25 per C sheets and Walker Goulard Plehn Company will furnish 690 pounds of white ledger paper at 13.52 cents.

Walker Goulard Plehn Company will furnish 2,145 pounds of white bond paper at 14.35 cents and the same firm will also furnish 2,099 pounds of same at the same price.

Walker Goulard Plehn Company will also furnish 272,000 pounds of G. W. writing paper V mail at 7.4 cents; the same firm will also furnish 120,000 pounds of same at 7 cents; 668,925 pounds same at 7.4 cents; and 111,946 pounds same at 7.4 cents.

Franks Parsons Paper Company will furnish 100,000 pounds of yellow G. W. writing paper at 6.25 cents. Collins Manufacturing Company will furnish 105,000 pounds of white index paper at $14.25 per cwt; also 163,200 pounds of same at $14.90 per cwt, and 50,000 pounds of same at $16.90 per cwt. Same firm will also furnish 100,000 pounds of same at $15.80 per cwt.

Walker Goulard Plehn Company will furnish 50,000 pounds of white book paper at 7.65 cents and the Marquette Paper Corporation will furnish 50,000 of same at 7.56 cents. Mead Sales Company will furnish 40,000 pounds of chestnut cover paper at $75.00 per ton and the same firm will furnish the same amount of the same paper at the same price. R. P. Andrews Paper Company will furnish 74,500 pounds of white book paper at 6.93 cents.

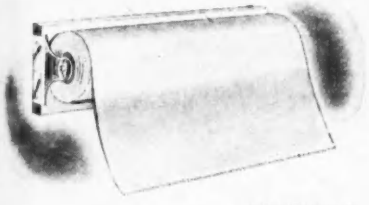
Will Find Post-War Uses

Developed to meet urgent war emergencies by United States Rubber Company, a new plastic resin board which is being successfully used by both Army and Navy will probably find many post-war uses not only in airplane manufacture but in many other lines including luggage, wall paneling, flooring, table tops and house furnishings.

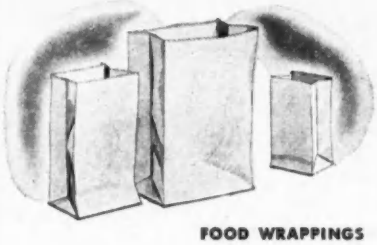
The plastic resin board is washable and not affected by gasoline, oils, acids, most alkalis or alcohol. It can be made highly decorative. Artistic effects can be created by changing the color or design of the fabric or paper base used, the hard, transparent, protective surface of the resin assuring permanence to the finished material. Colorful printed or woven design can be seen through a surface which may have either a dull or a brilliant luster. The color of the resin may also be changed.

Advantages of the plastic board for airplane manufacture are its light weight, half that of aluminium, its great tensile strength and its ability to withstand strains and excessive vibration. Because of these proper-

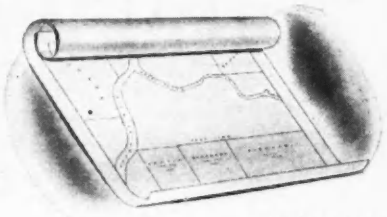
Making papers like these?



TOWELINGS



FOOD WRAPPINGS



MAP PAPERS

Boost their wet strength at low cost with

UFORMITE 466

a new resin for addition at the beater

HERE is a new, economical means for increasing the wet strength of toweling, bag papers, map and blueprint papers, glassine and other grades. Even in low concentrations UFORMITE 466 substantially increases the wet and dry physical characteristics of all paper stocks . . . including Kraft, sulfite and rag.

For beater application

This unique urea formaldehyde resin is specifically designed for application at the wet end of the paper machine—beater, head box, fan pump, or other convenient point. This feature permits full use of the drier section for curing the resin. Time required for passage through the drier is usually sufficient for curing.

Infinitely soluble in water, UFORMITE 466 can be added to the finish in any desired concentration.

To these special advantages of UFORMITE 466 are added such other features as low cost and freedom from color, odor, or taste in the finished sheet.

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Substantial increases in production capacity make it possible for The Resinous Products & Chemical Company to supply UFORMITE 466 in ample quantities to meet the needs of the paper industry. The technical assistance of our staff is at the disposal of paper manufacturers in most effectively applying this outstanding wet strength resin.

NEWER DEVELOPMENTS IN SYNTHETIC RESINS

- **PAPER RESINS**
  Liquid and powdered types
  ...for weatherproof paperboard
  ...for increasing wet strength
  ...for laminating work
- **RESIN ADHESIVES**
- **COATING RESINS**
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- **PLASTICIZING AND MODIFYING RESINS**

If you want assistance in any of these synthetic resin applications, our technical staff will be glad to study your problem without obligation.

3 awards to The Resinous Products & Chemical Company and its associated firms, Rohm & Haas Company and Charles Lennig & Company.

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WASHINGTON SQUARE, PHILADELPHIA, PA.

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger
EDITOR

No. 118 March 30, 1944 No. 13

COMING EVENTS IN PAPER INDUSTRY

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

CHICAGO PROFESSIONAL PAPER GROUP—First Monday of each month except July and August at Chicago, Ill.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION—25th Anniversary Convention, Edgewater Beach Hotel, Chicago, Ill., May 24, 25 and 26.

RESTRICTIVE DIRECTIVES

Warning that Congress and business must be on the alert to see that restrictive wartime directives are not projected into post-war economic controls, Dr. Julius Klein, Washington business consultant and former Assistant Secretary of Commerce, declared that it is "later than some think" in planning for reconversion of industry. "With transition from a war to peacetime economy already under way," Dr. Klein said, addressing the New York Paint Association meeting in New York, at the Biltmore Hotel, on March 24, "there is already evidence of hampering restrictions, such as the Vinson directive limiting profits of certain industries not to exceed 2% of costs. The Vinson directive, for example, has grave implications for any program of reserves which every prudent executive must have in mind in these troubled times. Every business should be permitted to look ahead to the period of heavy taxation, conversion costs, and wage increases to which industry will be subjected."

Pointing out that the simple statement that such directives are wartime controls is not assurance enough for business and industry, the Washington business consultant declared that there is nothing to prevent continued application of such directives during the economic disruptions and reconstruction period following hostilities. Dr. Klein said in part: "The business world is, of course, looking forward hopefully to relief from the restraints of wartime controls just as soon as the emergency conditions warrant. Most of these limitations have no doubt been thoroughly justified as part of the war effort, but there have also been admittedly some flagrant abuses by over-zealous, inexperienced enforcement agents. Unusual vigilance is therefore fully justified both on the part of business executives and of Congressional leaders to assure that any such abuses, however much they might be condoned as inevitable in the confusion and emergency of war, are not projected into the post-war period along lines now very frankly intimated by certain up-lift enthusiasts.

In order to appraise this situation, Dr. Klein pointed out that "it is important to have in mind the fact that the line between wartime conditions and the post-war period will by no means be clear cut or of very short duration, as was the case in 1918-1919. The war machine of that period was liquidated fairly swiftly, due to various circumstances such as the relatively narrower scope of military operations as compared with the present world-wide fronts. Furthermore, the leadership of our government during that period had far different ideas from the present set-up as regards modifying the entire social structure of the country under peacetime conditions. The present uneasiness in Congressional and industrial circles can, therefore, be fully appreciated."

Declaring that "The transition from war to peace is even now under way," Dr. Klein went on to say that "Conversion is not being held up until the actual cessation of hostilities. It is being made more gradual in the interests of avoiding shock, but this on the other hand does have its own definite periods, as indicated, since business may find itself eased into the transition period and beyond with considerable continuance of the various wartime controls. Among the controls which are now being particularly closely analyzed is the so-called Vinson Directive of January 26, 1944, clarifying an earlier one whereby certain manufacturers are to be permitted to make 'a profit not to exceed 2% of their costs'. This, we are told, is only a wartime measure, but it raises a number of crucial questions. Just how long is 'wartime?' What is to prevent its continued application during all of the countless economic disruptions and abnormalities associated, not only with the period of armed hostilities but also with the evidently long stretch of readjustment and reconstruction with which we shall be confronted?"

Asserting that "there is the even more serious issue as to whether this is another example of government directive, Dr. Klein asks: What becomes, in this case, of the time-honored prerogative of Congress to control profits through taxes? Repeatedly the OPA has been informed by Congressional Committees that Congress specifically reserves for itself any functions in this particular field. It is quite likely that similar expressions will be forthcoming in connection with the present Vinson pronouncement. To state that any directive or control is simply a 'wartime' measure is by no means as reassuring as it sounds. The restrictions now imposed by such

instruments will inevitably project their effects far into the transition period and beyond. The Vinson 3% profit restriction, for example, has grave implications for any program of reserves. Government restriction is but one of the many grave problems of reconstruction confronting all far-sighted executives at this time."

In concluding, Dr. Klein said in part:

"Post-war markets will be drastically different from those of 1939. Buying power will be curtailed as the war machine shrinks, but also it will probably be sustained in many areas and in many lines by the introduction of new products and the further exploitation of war-expanded power plants, pipe lines and air net works. These changes will call for a drastic reappraisal of our whole distribution mechanism, not the least of which will occur in advertising. In this field there will inevitably have to be a greater and more diversified effort in order to cope with these changes in distribution."

Plant to Convert Wastes to Alcohol

WASHINGTON, D. C., March 28, 1944—More than 100,000,000 additional gallons of industrial alcohol, wholly from sawmill wastes, may be made available annually, according to an official statement by the War Production Board which just announced approval by its Chemical Bureau of the first American plant to produce wood-sugar by an adapted German process.

The Defense Plants Corporation, the announcement said, has been asked to provide $2,247,000 to construct a wood-sugar and ethyl alcohol plant at Springfield, Ore., designed to produce 4,100,000 gallons of alcohol a year. It would utilize about 200 tons of dry sawdust and other mill wastes daily and is expected to be in operation within a year.

The project was sponsored by the Willamette Valley Wood Chemical Company, composed of Oregon lumbermen.

The program calling for 100,000,000 gallons or more a year would entail construction of many similar plants in softwoods regions of the West and South.

"Not only is this development of utmost importance in supplying a war-essential material, but it promises to mean much to forest industries generally," said C. A. Rishell, Director of Research, Timber Engineering Company. "It is well within the realm of possibility that this program will help solve the twin problems of sawmill and logging wastes. If so, a great step will have been taken in the direction of better forest practices and the encouragement of permanent timber growing in many of our leading forest areas."

Technical assistance has been given the project by the Timber Engineering Company, subsidiary of the national lumbermen's organization. Consulting experts have included Erwin M. Schaefer, former head of the first industry of this type in Germany; Dr. Eduard Farber, noted wood chemist, and Carl Levy, former superintendent of the Schaefer plant. All three are refugees from the Nazi regime.

The process, according to results obtained by the Forest Service in pilot plant tests last year, will produce approximately 1,100 pounds of sugar from a ton of dry waste wood, from which between 50 and 60 gallons of 190-proof alcohol can be made. The government has been paying an average price of about 90 cents a gallon for alcohol, needed chiefly for synthetic rubber and munitions, while the wood-sugar process is expected to produce it for less than 30 cents a gallon.

Chemical Bureau officials said that production and cost figures of the Oregon plant were conservatively arrived at. Its operation, they said, should develop techniques that would permit further installations at lower initial investment.

Materials Handbook

The fifth edition of the Materials Handbook has just been published by the McGraw-Hill Book Company (765 pages 6 x 9). It was prepared by George S. Brady who was for several years an American trade commissioner to foreign countries, and a consulting engineer, as an encyclopaedia for the use of purchasing agents, engineers, executives and foremen. It represents more than twenty years of work on the part of the author and began with an intensive study of the materials of each industry and an index of comparative data. The present volume refers to 6650 material items, giving their chief characteristics, sources, substitutes, adulterants and uses.

Among the items covered are abrasives, resins, adhesives, chemicals, metals, alum, asbestos, woods, waxes, clays, casein oils, cellulose, coal, paper, etc., and gives the information that is immediately needed regarding these materials.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 E. 42nd street, New York 17, N. Y., at $5.00 per copy.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1944		Corresponding Weeks—1943	
February 12	**89.6**	February 13	88.4
February 19	**91.2**	February 20	89.0
February 26	**89.2**	February 27	91.0
March 4	**88.7**	March 6	89.7
March 11	**89.1**	March 13	89.8
March 18	***92.2***	March 20	88.9

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1943	87.2	88.9	89.5	88.7	91.4	84.8	84.3
1944	90.1	*90.6*	...	...	...	...	...

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1943	91.0	88.3	89.6	89.6	82.0	87.8

COMPARATIVE YEARLY SUMMARIES

	1937	1938	1939	1940	1941	1942	1943	1944
Year to Date.	89.2	66.7	79.1	86.2	88.4	103.8	88.4	*90.4*
Year Average.	79.8	71.5	83.4	85.6	97.4	90.4	87.8	...

*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1938	56	63	63	60	60	59	59	69	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	82	77	78
1941	81	88	89	89	91	94	92	98	95	99	98	90	92
1942	102	101	101	95	82	72	68	75	76	81	82	77	84
1943	86	88	94	94	96	94	89	96	94	94	93	87	93
1944	90	*96*	..	..	..	..	..	..	..	..	..	..	..

Week ending Feb. 12, 1944—97
Week ending Feb. 19, 1944—96
Week ending Feb. 26, 1944—93
Week ending Mar. 4, 1944—95
Week ending Mar. 11, 1944—95
Week ending Mar. 18, 1944—95

†Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

NEW CYANAMID MELAMINE RESIN PROVIDES IMPROVED, LASTING "WET STRENGTH" IN PAPER

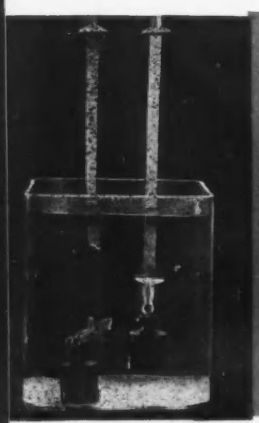
Cynamid's "secret" of providing "wet strength" to paper lies in the use of a special type of resin of exceptional efficiency which bonds fibers together so that they are highly resistant to separation when exposed to moisture. This new resin, developed in the Cyanamid laboratories, can be added directly to the fibers prior to the formation of the web. Thus without special equipment, manufacturers may turn out papers and packages that can replace and even improve upon the service qualities of critical materials.

This new resin, therefore, may be said to point the way to new usefulness for paper. Not satisfied, however, with the production of a material that would accomplish all this, research men in Cyanamid's paper chemical laboratories have by their diligent efforts been able to improve both the product and method of application.

Packaging papers, particularly where these are likely to be exposed to water such as in overseas shipments, have brought about an insistent demand for this new resin. Other fields of wartime use are for map, chart and blueprint papers . . . booklet stocks for field use . . . bandage and medical supplies . . . and other uses where resistance to inclement weather conditions is an important consideration. Here on the home front "wet strength" paper bags are replacing the traditional burlap for shipment to market of vegetables such as potatoes where vegetable moisture or wet weather might cause bursting of bags. It is likewise being used for tougher wrappings for meats and frozen foods . . . paper toweling and lens-wiping tissues.

Where strength (when wet) is the controlling factor governing basis weight of paper, the use of this resin will permit substantial reduction in basis weight with worthwhile savings in pulp.

For full details on the utilization of Cyanamid's new "wet strength" resin, see your Cyanamid representative or write to nearest Cyanamid office.



(Left) Here are "wet strength" tests as conducted in Cyanamid paper laboratories. Both papers have identical weights attached to the submerged ends. Unbroken paper strip at the right side of the jar is sample of stock made with new synthetic resin. It continued to hold the weight after days of suspension in water. The strip at left, fibers of which had not been "wet strength" treated, broke in three minutes after submerging.

(Left) Farmers were skeptical when potatoes were first sent to market in "wet strength" paper bags instead of the traditional burlap. But these bags have proven themselves to be strong and tough even when soaked through and through! As a result, not only potatoes, but other foods are being shipped this way.

(Right) Here, being subjected to water tests, are bags made of paper in which Cyanamid's "wet strength" resin is used.

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(A Unit of American Cyanamid Company)

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OF THE PULP & PAPER INDUSTRY
122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

Special Processes for Coloring Paper*

By H. A. Lips[1]

Abstract

The dyeing of paper with naphthanils, sulphur colors, and vat colors is described. The early history and background of each coloring process is discussed.

Naphthanils belong in the class of colors known as azoic colors. This means forming an azo dyestuff directly on the fiber. Almost a complete range of shades is possible, but the orange, red, and yellow shades form the bright shades for which these dyes are famous. These colors are suited for dyeing twisted papers used in auto seat covers, paper rugs and woven paper sacks.

Sulphur colors may be beater applied to paper from a solution of the color reduced with sodium sulphide. Formerly the liberation of hydrogen sulphide vapors when the beater was neutralized limited the use of these colors. Today the use of certain heavy metal salts such as zinc chloride and copper sulphate eliminates the odor and neutralizes the excess alkalinity in one operation. These colors are ideal colors for granite fibers and for dyeing all types of heavy black and brown shades.

Vat colors have the best all around fastness of any group of textile colors. They are usually bright with outstanding light fastness and are water insoluble. In general they are fast to chlorine, acids, and alkalies. They may be beater applied to paper from an alkaline hydrosulphite reduced solution of the color. This "leuco" exhausts on the cellulose fiber and may be air oxidized to give bright shades of every desired hue.

During the past 20 years the paper industry has grown remarkably. It has invaded fields undreamed of a few years before. It has replaced cotton and jute for many uses. It has replaced the wooden shipping container and is today one of the substitutes for iron and tin. These many new outlets have created a demand for paper to meet more rigid specifications which has resulted in a demand for dyes that have improved fastness properties. Light fastness and water bleed resistance are becoming more and more important. In many cases the common basic, acid, and direct colors cannot meet these new requirements. Pigments have been used and better and better pigments are becoming available. There are numerous uses, however, for which pigments are not adaptable.

Automobile seat covers and the new paper rugs often carry specifications requiring fastness to a 50-hour Fade-Ometer exposure. The color in the paper must be absolutely fast to bleeding with bright colors an obvious desire. During the last 5 years a few new processes have been adapted for paper coloring. These processes are not described in the literature, therefore, the application of "Naphthanils," sulphur colors, and vat colors to paper are described.

The Naphthanil Coloring Process

Napthanils are a class of textile dyes that have recently been adapted to coloring paper. These colors belong in the class of colors that the dye manufacturer calls azoic colors, which are insoluble dyes that are chemically formed directly on and in the fiber. They are applied by coupling two dye intermediates directly on the fiber. The resulting colors are bright in shade, water insoluble, and have reasonably good light fastness normally associated with azo pigment types.

Naphthanils are a result of a development in 1880 when Read Holliday and Sons of England discovered that the sodium salt of beta naphthol could be applied to cloth and, if later brought in contact with a diazotized amine such as paranitro aniline, formed a water insoluble red color on the fiber. Meister, Lucius, and Bruning developed a color range by coupling various other bases with the beta naphthol. These new colors had a great many advantages, but improvements were still desired. Griesheim Elekron AG in 1910 provided an improvement on beta naphthol and called it Naphthol AS which is the anilide of beta hydroxy naphthoic acid. It was a remarkable improvement in that it had affinity for cellulose and made possible the great many new naphthols that have since been added. Today a great many of the naphthols have chloro, nitro, methyl, ethyl, methoxy, or ethoxy groups substituted into the AS molecule. These new naphthols give better shades with improved fastness. The bright reds on towel borders, wash cloths, or on printed tablecloths are usually dyed with naphthol colors. The relatively fugitive basic dyes are the only class of colors that can surpass the brilliance of the napthanil colors for red, scarlet, and orange shades.

During the past 5 years some work has been done in adapting the naphthanil process to paper coloring procedure. Napthanils may be added either to the beater or applied on the surface. Surface application has the advantage of giving brighter, faster-to-light

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[1]Member TAPPI; Technical Laboratory, E. I. duPont de Nemours & Co., Inc., Wilmington, Del.

shades using less dye. A shade may be produced with naphthanils that is brighter than Crocein Scarlet and that will not bleed, since the dye is water insoluble. Crocein Scarlet, if wet, will bleed profusely.

Dyeing with naphthanils consists of two distinct operations:

A. Impregnating the stock with the naphthanil or coupling component to produce what is known as the "prepare."
B. Developing the color under controlled pH conditions by coupling the prepared material with the diazo component to form the water insoluable dye directly on the fiber. This is illustrated as follows:
Diazo component (in solution) + Coupling component (in solution) = Pigment (water insoluble).

Preparation for Use

The napthanil or coupling component itself is water insoluble and must be dissolved before using. The solution is best prepared by forming a paste with a small quantity of commercial alcohol and then adding sufficient caustic soda to form the sodium salt. The sodium salt is water soluble in the presence of excess alkali. It is always best to use soft water in dissolving the naphthanils but if it is necessary to use hard water the addition of a good water softener such as Calgon is suggested. The naphthanil solution is reasonably stable but prolonged storage may cause the solution to lose strength. This will first be indicated by turbidity and later by the formation or settling out of a precipitate. The addition of a small quantity of formaldehyde usually improves the stability of the solution.

The diazo or developing component comes in two forms, either the free base or as a stabilized diazo salt prepared from an aromatic amine. The free base must be first diazotized before it can be used. By diazotizing, the amino group of the base is converted into a diazo body which is reactive and will couple as soon as it is brought in contact with the prepare. This is done by reacting the base with acid and sodium nitrite under carefully controlled conditions. The procedure is relatively simple, but requires care in following the chemical reaction.

The dye manufacturers have also developed a series of stabilized diazo salts. These diazo salts are equivalent to the corresponding bases and are usually standardized at 20% of the strength of the base. In preparing these diazo salts the base is diazotized and this reactive diazo is stabilized with certain salts. The diazo salts are marketed as dry powders and may be readily dissolved with cold water. These dissolved diazo salts are equivalent to a solution prepared by diazotizing the base. Neither of these solutions are very stable and they should be used as soon after preparing the solution as possible. Stability is a direct function of temperature although light and the presence of certain metals are also factors. The diazo solution should be kept as cold as possible and protected from bright light with the surface area of the solution exposed to the atmosphere kept at a minimum.

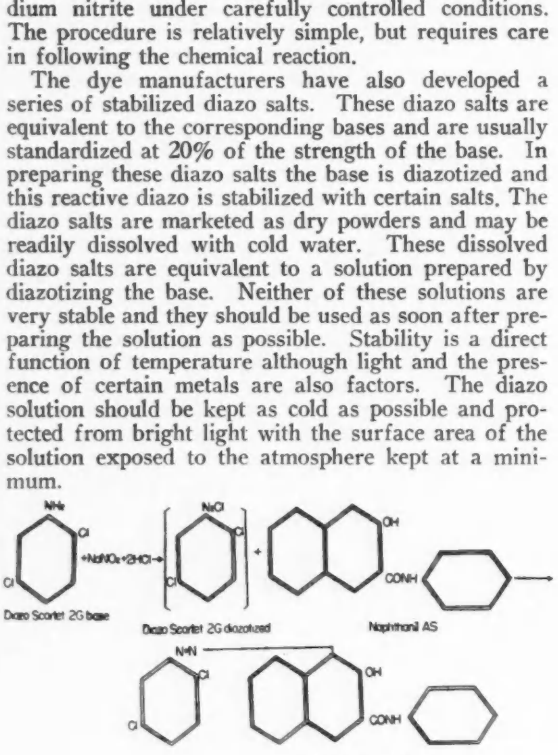

Fig. 1

Method of Application

In surface applying these colors it is necessary to use a two-step or two-roll coloring process. The naphthanil prepare should always be applied at the first roll. Sufficient wetting agent or penetrating assistant may be added to compensate for the speed of the machine. The desired quantity of prepare should be applied to the paper and allowed to soak in before the paper reaches the point where the diazo is applied. Coupling takes place almost immediately. Penetration is stressed because unless the prepare penetrates the sheet, the excess will follow the diazo applying roll and color will build up in the second bath. The two rolls may be as little as a few inches apart depending upon the speed of the machine. Coupling takes place very fast, producing maximum brightness. The alkalinity of the first bath may be counteracted by the acid buffers in the diazo bath so that the pH of the ultimate paper will not be changed appreciably.

These colors may be applied in the beater in a similar manner. That is to say, the prepare is added first, followed by the diazo. It is better to allow the prepare a short while to exhaust on the fiber before introducing the diazo. One of the advantages of the AS types over beta naphthol is that they have a greater affinity for the cellulose. Naphthanil AS-SW has an even greater affinity for cellulose than does the AS. The addition of either common salt or Glaubers salt following the prepare aids in exhausting it on the cellulose fiber. Coupling takes place almost immediately after the diazo solution is added; pH plays an important part at this step. The beater must be slightly alkaline after adding the prepare in order to couple the diazo when it is added. The diazo is preferably added from a solution although it may be added as the dry diazo salt. Coupling usually takes place very rapidly producing the desired shade. Size and alum increase the strength of the dyeings although deep bright shades are possible on a waterleaf sheet.

Naphthanil AS will give shades varying from scarlet to red and blue, depending upon the diazo used in coupling.

Selected naphthanils have good light fastness. The beta naphthol couplings are inferior to the AS couplings. Colors produced by coupling napthanils on the fiber are water insoluble and have good fastness to chlorine, acids, and alkalies; however, if desired, the color may be readily destroyed by heating in a solution of sodium hydrosulphite. A few of these colors dyed on paper are fast to ink eradicator. Surface application gives brighter and faster to light shades than are possible by beater dyeing.

Naphthanils have recently been used successfully for coloring twisting paper used in making the popular woven paper sack for packaging fruits and vegetables. The absolute fastness to bleeding and the good light fastness are distinct advantages over the old acid color combinations. They are adaptable for dyeing cover paper, display boards, twisting paper, fiber rugs, and any paper that requires maximum color brightness with reasonably good light fastness and non-bleeding characteristics. Figure 1 shows a typical coupling reaction.

Sulphur Colors

Sulphur colors as a group are an old and well-known class of colors which have always been in

great demand by the textile industry and have recently found a place in paper dyeing. Following the last war among the first dyes produced in America was Sulphur Black. This is still one of the most important colors for textile dyeing.

As a class they are generally dull in shade, cheap in price, and are bleed and wash fast. A heavy shade of black can be produced with Sulphur Black at a price that is only slightly higher than the cost of a combination of direct black shaded with basic colors. The backwater of the Sulphur Black combination should be clear. Sulphur colors are ideally suited for graniting fibers as these colors once applied to fiber are water insoluble and therefore the dye cannot bleed or migrate on the lighter stock.

In 1873, the first sulphur color, Cachou de Laval, which was developed in France, was made by fusing wood shavings and sawdust with sodium sulphide and sulphur and gave improved fastness and economy of application. A good deal of work was done trying to develop new sulphur colors, but 24 years elapsed before any real notable achievement was made. In 1897 Vidal Black was discovered. This new dye was the result of fusing para hydroxy dinitrodiphenylamine with sulphur and sodium sulphide and was the starting point for the numerous colors that have since been developed. Today yellow, orange, green, blue, violet, brown, and black sulphur color shades can be prdouced. Despite the great many distinct colors that have already been developed, their chemical structure has not been definitely established.

Sulphur color shades are ideally adapted for coloring kraft and unbleached fibers. They were first used for coloring paper soon after the turn of the century but their use has always been limited to special jobs. One of the principal objections to the use of sulphur colors in the paper industry was the evolution of hydrogen sulphide vapors and this gas was liberated when alum was added to the reduced color in the beater to neutralize the sodium sulphide used in reducing the dye. Recent improvements in dyeing these colors using certain heavy metal salts to react with the sodium sulphide before it can be converted to hydrogen sulphide have now completely overcome this obnoxious feature and no disagreeable vapors are evolved. However mills that have copper lined beaters should not attempt dyeing with sulphur colors because of the black stain that would form on the copper due to the reaction between the sodium sulphide and the metal.

Method of Use

Sulphur colors dye paper fibers in a way similar to direct colors. They differ materially from the direct colors, however, in that they are best dissolved in alkaline solutions of sodium sulphide. The dye itself is insoluble in water consequently to dissolve the color a definite quantity of commercial sodium sulphide is added to the dye and hot or boiling water is added to the mixture. The quantity of sodium sulphide required depends upon the dyestuff that is to be dissolved. The dye dissolves readily in this reducing solution. It is important to make sure that the dye is completely reduced so that the maximum color value may be realized. Before adding the dye to the beater a small quantity of sodium sulphide (approximately 5 pounds) should be added to the stock to remove any oxidizing influences present in the pulp. The desired quantity of color may then be added followed by 50 or 100 pounds of common salt to aid exhausting the color on the fiber when large quantities are used. The beater is preferably heated to 120°F. to develop the maximum color value. A few colors do not require salt, others do not require heat, information being available from the various dye manufacturers for each color. The color exhausts very rapidly on the fiber and less than 15 minutes are required for complete exhaustion. The beater is now quite alkaline due to the excess sodium sulphide present. The addition of a solution of certain heavy metal salts such as zinc chloride or copper sulphate at this point will precipitate the excess sodium sulphide as the metal sulphide and neutralize the high alkalinity and the pH will then be very close to the original pH of the stock slurry and the pulp may be sized normally. The small amount of metal sulphide retained in the sheet will have no effect on the sheet properties and only a slight effect on the color. Zinc chloride is ideal for this purpose. The white zinc sulphide formed will give a somewhat brighter shade than if copper sulphate or lead acetate are used. Approximately 1.2 pounds of commercial zinc chloride per pound of sodium sulphide present in the beater is recommended.

The color is now firmly attached to the paper fiber and cannot be washed off. The dyed fibers may now be used for graniting fibers or if a full shade is desired, the stock may be sized with regular size and alum without further treatment.

In combination dyeing of sulphur colors together with acid, basic, or direct colors the dye should always be added and exhausted first on the fiber. As soon as the metal salt has been added the other shading colors may be dyed on the fiber.

Sulphur colors aftertreated with copper sulphate are duller and usually somewhat faster to light than the zinc chloride aftertreated dyeings. A number of the colors will withstand a 100-hour Fade-Ometer exposure without serious fading. They are reasonably fast to acids and alkalie, but are relatively fugitive to chlorine bleach. They are ideal for coloring all heavy shades of browns or blacks. Twisting papers for fiber rugs and automobile seat covers are often dyed with these colors.

Vat Colors

Vat colors are very important colors for dyeing textiles. They are used to dye cotton and rayon where the fastness requirements rule out other dyes. When clothes made from these fibers are marked "color fast" it is almost certain that they have been dyed with vat dyes. Army specifications require that the soldiers' cotton service uniforms be dyed with vat dyes as these colors resist the damaging effects of tropical sunlight, sea water, and repeated laundering. The rag mills that have attempted to strip some of the khaki rags are well acquainted with the fastness of vat dyes.

Indigo was the first vat color. It is a very old dye having first been used in India and Egypt as early as 1500 B.C., however it was not until after 1882 when Baeyer established the structural formula of indigo that synthesis became possible. Since Baeyer's important contribution to organic chemistry a great many vat dyes have been synthesized so that today they are available for coloring cotton and viscose rayon in every desirable shade with the majority brighter and faster than indigo. They are water insoluble dyes that, like sulphur colors, are applied

from a reduced solution, but in this case sodium hydrosulphite is used to reduce the color in place of sodium sulphide.

Vat colors are sold as water dispersible powders, pastes, or grains. They are preferably dissolved in an alkaline reducing solution of sodium hydrosulphite. The reduced color is known as a leuco derivative. "Leucos" vary greatly in shade, for instance, the alkaline leuco of a khaki vat dye is red in shade and of a blue vat dye it may be yellow.

The paper industry has been using dispersed vat colors for tinting high grade papers for many years. These colors are considered permanent to light when applied on paper. There are a great many more vat dyes available than the few sold to the paper industry as tinting pigments. Although no paper mill has ever been known to have actually attempted to vat one of these colors on paper, a considerable amount of work has been done in the laboratory studying the application of these colors in paper dyeing. It was found that they can be vatted into the fiber to give bright, fast-to-light, and water insoluble shades.

UTILIZATION

The best method that has been found for applying these colors to paper is by adding a solution of the reduced vat to the pulp in the beater and allowing it to air oxidize into the fiber.

The beater should, however, first be heated to 140°F. and a small quantity of caustic and hydro added to counteract the oxidizing influences present in the beater. After adding the solution approximately 10 minutes are required before the leuco starts oxidizing into the fiber. The addition of some cold water to the beater at this time will aid materially in oxidizing the color. Sodium perborate and other oxidizing agents may be added, but tests show that no advantage is to be gained. As soon as the color is completely oxidized, sufficient acid, alum, or niter cake should be added to counteract the excess alkalinity. The sheet may then be sized in the normal manner.

Vat dyes are not recommended for dyeing ordinary paper, but rather for special papers requiring maximum fastness. The very highest grade rag papers can be dyed with these colors to give color fastness properties equal to those of the paper itself. Waterleaf sheets made from high grade stocks beater dyed with vat colors make good bases for plastic impregnation. Plastics made from this type of paper have the necessary fastness required for many uses of plastics.

These three coloring processes are new to the majority of paper mills. Each process can be used to fulfill a specific requirement and while the processes undoubtedly sound complicated, actually they are not. They are in every day use by the textile dyer and can be readily adapted to paper.

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5. Lubs, H. A., and Laughlin, E. R., U. S. Patent 2,234, 648 (March 11, 1941).

New Tappi Members

The executive committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

Robert E. Bundy, Vice-President and general manager of the Federal Container Company, 56th and Paschall avenue, Philadelphia 43, Pa., a 1927 graduate of the University of Washington.

Mr. H. H. Fassnacht, explosives chemist of the Eastern Laboratory of E. I. du Pont de Nemours & Co., Gibbstown, N. J., a 1931 graduate of Columbia University.

Paul W. Felt, chemical engineer, Brown & Bigelow, 1286 University avenue, St. Paul, Minn., a 1933 graduate of the University of Minnesota.

Andrew I. Fleming, manager of the Westfield Paper Company, Ltd., Bathgate, West Lothian, Scotland. He attended Heriot Watt College, Edinburgh.

Samuel S. Gutkin, technical director, Resins, Falk & Co., Pittsburgh, Pa., a 1928 graduate of New York State College of Forestry.

Harry H. Heuser, chemist, Vulcan Detinning Company, Sewaren, N. J., a graduate of Cornell University.

Nathan Millman, chief chemist, the Huber Company, Huber, Georgia, a 1926 graduate of Rhode Island State College.

Robert D. Rusch, technical superintendent, International Paper Company, North Tonawanda, N. Y., a 1934 graduate of the Institute of Paper Chemistry.

Lt. Erik V. Ullman, c/o Royal Norwegian Airforce, 80 Broad street, New York, New York, a 1932 graduate of the Norwegian Institute of Technology.

TAPPI Notes

Paul M. Schaffrath, formerly with the New York and Pennsylvania Company is now chemical engineer for the Moore Research and Service Company, Niagara Falls, N. Y.

J. C. Bletzinger, formerly of the Sterling Pulp and Paper Company is now in the War Products Division of the Kimberly-Clark Corporation, Neenah, Wis.

Archie J. Deutschman, Jr., recently in the U. S. Army is now a research chemist at the University of Illinois, Urbana, Ill.

Lloyd Lang formerly with the Kimberly-Clark Corporation is now chemical engineer for the Hollingsworth & Whitney Paper Company, Waterville, Maine.

August W. Bremer, formerly with the St. Joe Paper Company is now at Camp Hood, Texas, in the Army.

Eric V. Ullman, formerly of Toronto is now with the Royal Norwegian Air Force, New York, N. Y.

William J. Krodel, formerly with the Pioneer-Flintkote Company is now a student at the University of Texas, Austin, Texas.

L. D. Smiley, formerly with Nick F. Helmers Inc. is now constructive foreman for the Florida Pulp and Paper Company, Pensacola, Fla.

Melvin P. Riehm, formerly with the Philip Carey Manufacturing Company is now general manager of Loraco Industries, Inc. Lancaster, Ohio.

W. O. Hisey of the N. Y. State College of Forestry, Syracuse, N. Y. would like to obtain the following issues of the PAPER TRADE JOURNAL to complete sets for binding: January 4, 1934, October 11, 1934, January 28, 1937, and February 11, 1937. Anyone having these copies and would like to accommodate Professor Hisey should write him direct.

Developments in the Manufacture of Structural Products From Hydrolyzed Wood*

By Robert M. Boehm[1]

Previous articles on the Masonite process and products are referred to. The present article briefly describes the process and standard products.

The chemical and physical changes occurring in wood as the result of high temperature steam explosion are described and the effect of such changes on the properties of the final product. Such knowledge of the chemical functions of the varying fractions has been applied to the manufacture of special products required for the war effort. Such products are briefly described.

Previous articles have described the Masonite process for the manufacture of structural board products and various developments in the field of lignocellulose plastics, byproduct chemicals and other materials *1, 2, 3, 4,*. The present article will give briefly a recapitulation of the raw material and processes and some of the normal products but will be devoted primarily to the research and development activities which have made possible the production of new types of products required in the present emergency together with descriptions of the properties and uses of such new types of products and a description of present and postwar possibilities.

Definitions of the terms used in this article are required. While wood is the material in the process and is specifically described in this article, the processes described and the reactions outlined will apply, with some modifications, to the use of any fibrous lignocellulose material. While from the standpoint of economics, quality of products, and the like, wood is the preferred raw material, modifications of the process will apply almost as well to such annual growth as corn stalks, cotton stalks, bagasse, and other materials.

The term hydrolysis as customarily used in this connection refers primarily to the rupture of the lignin-carbohydrate bond in the wood. While hydrolysis may be carried out under either acid or alkaline conditions, acid hydrolyses are specifically referred to here. The saccharification of wood by dilute mineral acids, the sulphite cooking process for manufacture of paper pulp, the processes developed at the Forest Products Laboratory and used in connection with the manufacture of lignin plastics by other investigators, are all of this type. In the Masonite process, the wood undergoes an acid hydrolysis as the result of acetic and formic acids developed *in situ* from the woody material itself.

Historical

Some twenty years ago, William H. Mason, a former associate of Thomas A. Edison, turned his attention to the South and to the recovery of useful constituents from the lumber industry. Following successful development of processes for recovery of turpentine, rosin, and pine oil from sawn lumber, he was impressed by the tremendous quantities of waste involved in the lumbering operation. He was familiar with the softening effect of steam on wood and began experimental work to combine this action with a method of rupturing the fiber bond by explosion with high pressure steam. To accomplish this result, he found it necessary to go to pressures ranging up to 1000 pounds per square inch in order to obtain the proper degree of fiber liberation following a lower pressure steaming time to soften the fiber bond.

This exploded fiber was a brown, fluffy mass, which is known as gun fiber. It was found to be very well suited for the manufacture of structural insulation board and his first attention was turned towards this market. However, experimental work proceeded along the lines of developing a high density building board. After numerous failures, he found that by correct simultaneous application of heat and pressure to a sheet formed of these fibers, a highly dense, strong, and water resistant product could be made. This product was given the name "Presdwood". It received ready acceptance in the building trade and in industrial fields and production rapidly increased as the years passed until at the present time Masonite Corporation has a capacity of about 1,750,000 square feet of product per day and has already manufactured and shipped essentially enough structural board product to build a four foot sidewalk to the moon.

Description of Process

Both hardwoods and softwoods are used, the former consisting largely of gum, magnolia, poplar, and other Southern hardwoods and the latter of short leaf and long leaf pine. The wood is received at the plant in bolts 5 feet long. All wood is purchased in the peeled condition although rough wood may be used by modification of the process.

Softwoods and hardwoods are kept separated through the wood room and shooting operations and are then blended in proportions to give the desired properties in the finished product. Some of the products consist entirely of softwoods, others entirely of hardwoods, and some of mixtures of the two types of fibers, exploded separately, in the proper proportions to give specific results.

The explosion operation is the most rapid method of fiber production which has ever been utilized. The entire cycle in the guns run somewhat under 1 minute, including filling, preheating, bringing up to pressure, holding at pressure, and exploding. A steam pressure is used of 1000 pounds per square inch, equivalent to about 550° F. or 285° C. The time—temperature curve is extremely important, as little as 0.5 second difference in the time giving distinct changes in the fiber produced. This ratio must be coordinated with the type of wood and the size and moisture content of the chips.

When the steamed chips leave the gun, travelling at

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Hotel Commodore, New York, N. Y., Feb. 14-17, 1944.

[1] Member TAPPI; Director of Research, Masonite Corp., Laurel, Miss.

something like the speed of a bullet, they are exploded into a brown, fluffy mass of moist fiber. Entering a cyclone, the steam is let off and condensed and the exploded fiber falls into a stock chest where it is mixed with water and pumped through washers, refiners, and screens, and where a small amount of waterproofing material may be added. It is then formed into a sheet on a modified fourdrinier forming machine, trimmed, and cut to lengths by a travelling cutoff knife. At this stage the material is known as a "wet lap".

According to the modifications of the process, this wet lap may be fed directly into steam heated hydraulic presses for the manufacture of insulation and pressed fiber products or may first be dried to essentially air dry condition and converted into other types of hardboard products, some of which will be described later.

Certain of the hardboard products designed for unusual service are "tempered". This includes the impregnation of these products with a siccative material, followed by complete curing by polymerization and oxidation. This results in a product of much higher strength, water resistance, abrasion, and other desirable properties.

The boards discharged moisture free from the presses or from the tempering operation are thereupon humidified to a moisture content of about 5%, approximating equilibrium conditions with the atmosphere. In this way, undue expansion, warping, and the like are eliminated.

Description of Products

The products vary in specific gravity from approximately 0.02 to 1.44, the practical minimum and maximum possible from lignocellulose material. Such products have been described in some detail in a previous publication (*2*). It is not the purpose of the present article to describe these standard products in greater detail but to emphasize the production of newer products of a plastic and semiplastic type which have found special use in the present emergency. For this purpose, it is now necessary to follow the chemical and physical changes occurring as a result of the explosion process, in more detail.

FIG. 1
Exploding Chips to Fiber

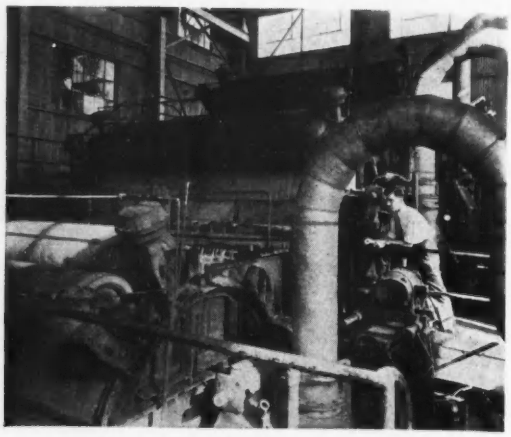

FIG. 2
Counter Current Washers Processing Fiber

Wood Hydrolysis

In the early stages of the steaming operation in the guns, a considerable quantity of acetic and formic acids is formed. These act rapidly on the wood structure to produce an acid hydrolysis which is controlled by the temperature and time in the gun. The degree of this hydrolysis is vital in the manufacture of the many types of products. It may be modified by buffering or in other manners but in the general process, the time and temperature conditions offer sufficient flexibility for the manufacture of a wide range of products having specific properties.

According to the degree of hydrolysis, the lignin-carbohydrate bond is broken. The cellulose portion of the wood is not greatly changed in the normal process but may be somewhat broken down with increasing degrees of hydrolysis. Since the cellulose portion forms the framework or structure of the board products, much as it does in the original wood, the ability to prevent excessive degradation of this fraction while securing the desired degree of hydrolysis is highly important.

The hemicellulose fraction, under the conditions of acid hydrolysis obtained, are largely converted to water soluble or water dispersible condition and are removed by a washing operation. The removal of the correct proportion of this fraction is very important in the properties secured in the final product and must be controlled with a considerable degree of exactitude. Apparatus for the recovery of these hemicellulose fractions in a concentrated condition has been installed and definite plans are underway for the conversion of this fraction to furfural as well as to the recovery of acetic and formic acids and other wood byproducts.

In the breaking of the lignin-carbohydrate bond, the lignin is converted to a state in which it is soluble in certain organic solvents. The degree of hydrolysis determined the thoroughness of the breaking down of this linkage and consequently the percentage of lignin converted to soluble form. The lignin fraction also undergoes a considerable degree of depolymerization but apparently without change in its chemical properties. In this respect, it is still "native lignin" susceptible of the same reactions as the lignin in the original wood but having undergone the breaking of the lignin-carbohydrate linkage and a considerable degree of depolymerization. As a result of this, lignin has become "activated" and is in suitable condition

for reexerting its bonding powers when subjected to the proper conditions of moisture, temperature, and pressure. This bonding power is to a considerable extent thermosetting and in this way bears a marked resemblance to the synthetic resins. The entire mechanism of this bonding effect is not known as yet but various methods of activating such effect together with many modifications are known and practiced in the manufacture of the newer types of products.

The removal of the lignin fraction by organic solvents has made possible a systematic study of the chemistry of this fraction. This is underway intensively at the present time. However, in the normal process, no such separation of the lignin components is required, the degree of activation and the percentage of soluble lignin being determined by the shooting conditions having in mind the type of finished product it is desired to make. However, this fundamental research work on the lignin fraction has enabled us to predict its behavior and consequently to manufacture products having specific properties. This ability to manufacture such special products has been particularly important in connection with the present emergency.

Newer Developments

One of the early requests at the outbreak of the war was for a material to be used in airplane factories and elsewhere as a substitute for steel dies for forming and cutting metal parts. The requirements of this product were high density and resistance to compression and exceptional strength properties as well as that it be easily machined with either wood working or metal working tools. Intensive research led to the development of airplane die stock which is now used in essentially every aircraft plant in this country as well as in many other applications in the metal working industry. It is well adapted for the manufacture of dies for shipping metal parts and, in production, it is possible to get a die from the drafting board onto the production line in a matter of hours rather than of days. This has led to some amazing reductions in tool and die cost in the metal working industry, this material having now been adopted not only for dies but for spinning chucks, router blocks, drilling templates, assembly jigs and fixtures, and many other uses.

Airplane die stock is manufactured by a modification of the normal process wherein it is possible to make products of great density and thickness. This involves initially converting the fiber to a semiplastic condition so that the bond secured in the press is sufficient to give the qualities of high density and resistance to compression. Die stock is customarily manufactured in thicknesses up to 2 inches although panels have been produced for special purposes up to 6 inches thick and in 4 foot by 12 foot panels. Some idea of the departure from normal procedure is indicated by the fact that, in an industry where a 35 pound panel is considered customary, some of these panels weigh well over a ton. In practice, these are laminated by some of the newer adhesives to thicknesses of 3 and 4 feet for dies and spinning chucks for special adaptation.

A new modification of this technique is now going into production to produce other types of highly dense, strong, and water resistant panels for the ship building industry as well as for other uses. In this connection, it was found that a suitable panel from the standpoint of strength, machine ability, dimensional stability, water resistance, and electrical properties was not available and it was necessary to develop a special type of product for this purpose. An interesting side light on this development is the fact that this panel is bonded not only by lignin but by a special type of resin which can be secured from the hemicellulose content of the waste liquor. While this

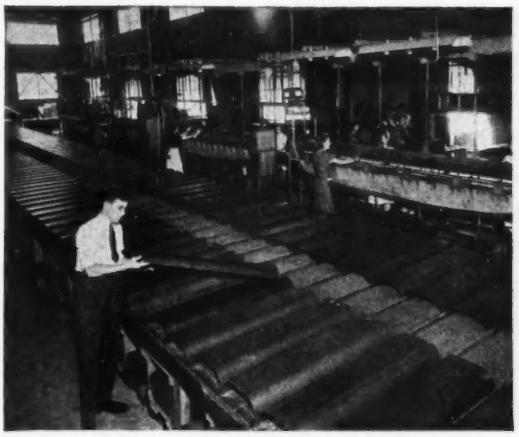

FIG. 4
Manufacture of Fluorescent Lighting Reflectors

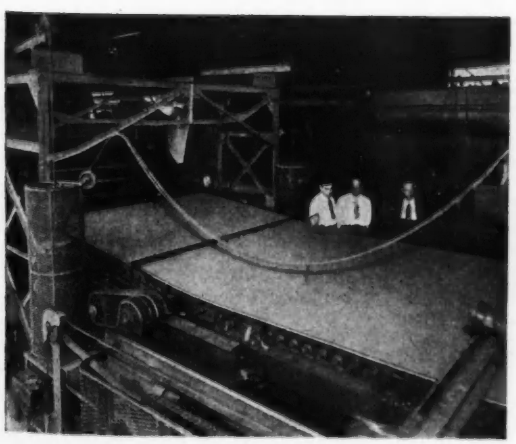

FIG. 3
Board Entering Drier from Forming Machine

FIG. 5
Use of Airplane Diestock in Forming Duraluminum

panel is not in commercial production at the moment, it is a development of considerable importance and should be in production shortly.

Some time ago the company was approached by a certain governmental agency to manufacture a special type of hardboard product for the fluorescent lighting industry to replace metallic reflectors. Such a product was developed having high dimensional stability and capable of being bent to the shape of the reflectors. It was necessary to install equipment to make this bend but the product was quickly developed and placed in production and a good many miles of fluorescent lighting reflectors are now operating in defense plants throughout the country.

Another development of special interest which called on the accumulated research experience of the company was in the development of a special product for lofting board to be used in the aircraft and ship building industry. This is another case where a product of this type was called on to replace metals but proved to have certain unique properties which made it superior to the metals in some respects. The requirements here were high dimensional stability, hardness, strength, and the ability to take drawings, either direct or by coating the panels with a photographic emulsion so that large scale prints could be transferred directly to the face of the panels. Such panels are filed and constitute essentially a lifesize blueprint of the parts in question. This panel was also successfully developed and has found wide application, not only as a lofting board but for other purposes.

Certain other examples of the development of special products for the war effort are still too confidential for discussion at this time but have definitely demonstrated that the lignin type bond as applied to the manufacture of hardboard products will produce products adapted to meet special requirements which, in certain cases, can be met by no other product now available. In some of these cases, the request for a new type of product for the war effort has come directly from high government sources after government research had investigated all available materials without finding one satisfactory for the purpose.

In the development of "Quonset" and "Stran Steel" huts as well as newer installation ranging from Greenland to the Tropics, the unique properties secured in the lignocellulose hardboard products have made these products ideally adapted for these purposes.

Formed Products

Reference has already been made to the manufacture of fluorescent lighting reflectors. Other recent developments illustrating the flexibility of the lignin bond involves the manufacture of formed articles either from the finished board product or directly from the wet lap or dry lap. Examples of such products include ice boxes, some 250,000 of which have already been produced, chair seats and backs, structural shapes, and the like. While production of this class of material is now somewhat limited due to the necessity of confining essentially all of production to the demands of the war effort, the postwar field will find available materials which are new and which have outstanding qualities for special purposes.

Our knowledge of lignin is still far from complete. This statement could be applied to the entire field of hydrolyzed wood, but basically it is the "free" lignin which makes possible the unusual potentialites of this material. However, great strides have been made in the knowledge of lignin and the lignin-carbohydrate bond in recent years, particularly in our ability to predict and control the reaction and to convert the chemical analyses into terms descriptive of the qualities of the final product.

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2. Boehm, Robert M., Plastics and Chemicals from Wood, *Paper Trade J.*, May 2, 1940.
3. Lee, James A., New Products from Wood, *Chem. Met. Eng.*, Feb., 1940.
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The Magic of Steam

As a sequel to its educational film on steam turbine operation, "The Magic of Steam," Allis-Chalmers Manufacturing Company announces the release of a new movie, "The Surface Condenser."

Shown in this film for the first time are the step-by-step construction and operation of the modern surface condenser. The condenser's part in the steam cycle of a power plant is explained by diagram, cutaway view, and animation.

Shop scenes show construction of the condenser from installation of the inlet and welding of the condenser shell to assembling of the water boxes. How engineering of each part of the surface condenser contributes to its total efficiency in reclaiming the steam exhausted by the turbine is demonstrated. Finally, the audience sees an animation of the condenser in operation and then an animated diagram of the complete power plant system of which the condenser is a necessary part.

Running time of the condenser film alone is 18 minutes, making a full 40-minute program on turbines and condensers, free from advertising, when the film is used in conjunction with Allis-Chalmers' "The Magic of Steam." It is a 16 mm film, for use on sound projectors only.

The movie is being loaned free to any industry or power group interested in showing it, particularly in connection with training programs, and prints may be purchased for permanent use at cost for $24. To borrow or purchase "The Surface Condenser" or both films in the sequence, write the Allis-Chalmers Manufacturing Company, Milwaukee 1, Wis.

Pacific Mills To Build Bleach Plant

[FROM OUR REGULAR CORRESPONDENT]

Vancouver, B. C., March 25, 1944—General contract for erection of a new bleach plant building to improve the quality and color of pulp and to be erected at Ocean Falls, B. C., for the Pacific Mills Limited, foot of Campbell Avenue, Vancouver, has been awarded James L. Galloway, 10111 Richelieu Street.

Designed by the company's engineers at Ocean Falls, plans reveal a four-storey reinforced concrete building 43 by 43 feet with flat tar and gravel roof. It will involve an expenditure of approximately $40,000, with a further sum being spent for installation of equipment.

According to J. A. Young, vice-president of the company, the current contract is part and parcel of the big program of construction commenced some three years ago at the Ocean Falls plant. When the entire project has been completed by about September 30 of this year, a total expenditure of approximately $500,000 will have been made.

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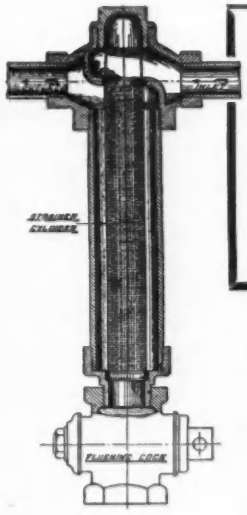

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New York Paper and Pulp Market Review

Demand For Paper and Paper Products Continues Heavy — OPA Raises Pulpwood Prices In Northeast To Stimulate Production — All Grades of Cotton Rags Active—More Paper Stock Is Needed.

Office of the PAPER TRADE JOURNAL.
Wednesday, March 29, 1944.

Trade requirements for paper and paper products continue insistent and heavy. The manufacture of major types of paper is being maintained at a high level. The industry has established a noteworthy production record despite difficulties in obtaining new equipment and repair parts and in meeting the serious nation-wide manpower shortage. Reports received from some of many manufacturers' representatives, jobbers, and general paper merchants, reflect a strong demand for paper and inability to fill the heavy volume of orders received.

The index of general business activity for the week ended March 18 rose to 143.4, from 143.2 for the previous week, compared with 137.0 for the corresponding week last year. The index of paper board production was 149.9, compared with 144.2 for the previous week and with 148.1 for the corresponding week last year.

Paper production for the week ended March 18 was estimated at 92.2%, compared with 88.9% for 1943, with 103.6% for 1942, with 91.7% for 1941, and with 85.0% for the corresponding week for 1940.

Paper board production for the week ended March 8 was 95.0%, compared with 92.0% for 1943, with 101.0% for 1942, with 82.0% for 1941, and with 70.0% for the corresponding week for 1940.

Manufacturers' inventories increased by more than $250 million during January, to reach a total at the end of that month of $18 billion, a new high record, reports the Department of Commerce. The index of the value of manufacturers' inventories, total non-durable goods, was 151.4 for January 1944, compared with 148.6 for January 1943. The index of the value of inventories of paper manufacturers for January 1944 was 133.0, compared with 141.4 for January 1943.

The index value of manufactures' shipments, total non-durable goods, for January 1944 was 178 compared with 169 for January 1943. The index of manufacturers' shipments of paper and allied products for January 1944 was 159, compared with 138 for January 1943.

Wood Pulp

The OPA has authorized price increases on pulpwood from 50 cents to $2.75 a cord in the Northeast region, including New York, Maine, New Hampshire, Vermont and parts of Connecticut and Massachusetts west of the Connecticut river. This higher price schedule is now in effect.

Rags

Mill demand for cotton cuttings is reported active, with supplies inadequate to meet requirements. Prices are strong and firmly maintained at ceilings on all grades.

The roofing rag market is strong in tone. Mills are quite widely reported as unable to obtain all the roofing stock they urgently require. Prices are strong at ceilings.

Old Rope and Bagging

Demand for old No. 1 Manila rope continues inadequate to meet the heavy requirements for the war. Prices are unchanged at ceilings.

The scrap bagging market is reported weak at this date. Demand is so limited that prices are soft. Quotations are still nominal.

Old Waste Paper

The need for more waste paper is widely reported as still acute. Collections are fair and while some gains have been reported, total collections are still below expectations. Prices are strong at ceilings.

Twine

All grades of fiber twines are in active demand. Prices are firm and continue unchanged. No important developments have been reported during the current week.

H. G. Boon and W. H. Kenety Appointed

WASHINGTON, D. C., March 29, 1944—Henry G. Boon has been appointed assistant director of the Paper Division of the War Production Board, Rex W. Hovey, director of the Division, announced today. Mr. Boon has been deputy Director in charge of the Fine Paper Branch and prior to his appointment to the WPB last fall, was general superintendent of the Kimberly-Clark paper mill at Neenah, Wis.

William H. Kenety of the Fitchburg Paper Corporation, Fitchburg, Mass., succeeds Mr. Boon as deputy director in charge of the Fine Paper Branch of the Division.

Roth F. Herlinger of the Gummed Products Company of Troy and Cincinnati, Ohio, was named Deputy Director in charge of the Converted Paper Products Branch of the Paper Division, filling a new position.

The following appointments were also announced:

George K. Ferguson, president and general manager of the Watervliet Paper Company of Watervliet, Mich., Chief of the Book Paper Section.

Paul M. Beach of the Regal Paper Corporation, New York, Chief of the Glassine and Greaseproof Paper Section, succeeding Charles Snow, who resigned recently to join the Waxide Paper Company of St. Louis, Mo.

Edward P. Jaeckel of the Arkell Safety Bag Company of New York, Chief of the Waterproof Paper Section. He succeeded Guy McCorison of Appleton, Wis. who becomes a consultant of the Section, being no longer able to serve full time.

The original Waterproof Paper and Gummed Tape Section has been reorganized, a portion now being consolidated with the Stationery Section to form the Stationery and Gumming Section, under direction of Leonard F. Smith of Springfield, Mass., formerly Chief of the Stationery Section. The Waterproof Paper Section is headed by Mr. Jaeckel.

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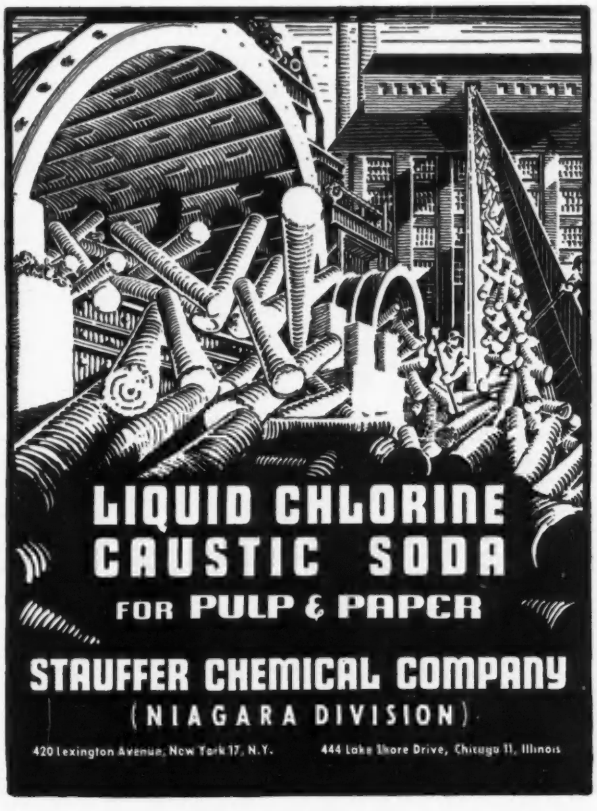

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MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL.
Wednesday, March 29, 1944.

BLANCE FIXE—The market for blanc fixe continues to conform to prevailing quotations. Current demand is reported fair. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton.

BLEACHING POWDER—Current demand is reported good. Supply situation reported satisfactory. Bleaching powder is currently quoted at from $2.50 to $3.10 per 100 pounds. All prices in car lots, in drums, f. o. b. works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound, f. o. b. shipping point. Imported casein 11½ cents per pound, f. o. b. source.

CAUSTIC SODA—Supply situation still tight, with production and demand reported heavy. Quotations continue unchanged. Solid caustic soda is currently quoted at $2.30 per 100 pounds. The flake and ground are currently quoted at $2.70 per 100 pounds. All prices in car lots, in drums, f. o. b. works.

CHINA CLAY—Demand for some grades of china clay is reported moderate this week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mines. Imported china clay is currently quoted at from $13 to $25 per long ton, ship side.

CHLORINE—No change in the market situation has been reported this week. Production and demand well balanced. Prices remain unchanged. Chlorine is quoted at $1.75 per 100 pounds, in single-unit tank cars, f. o. b. works.

ROSIN—Higher prices are quoted on some grades of rosin this week. "G" gum rosin is currently quoted at $4.78 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $4.73 per 100 pounds, in barrels, New York. Seventy per cent gum rosin is currently offered at $5.05 per 100 pounds, f. o. b. works.

SALT CAKE—Demand reported moderate. Quotations on salt cake continue to remain unchanged. Domestic salt cake is currently quoted at $15 per ton, in bulk. Chrome cake is currently quoted at $16 per ton.

SODA ASH—Market requirements for soda ash continues to be reported as heavy. Shipments improved. Prices continue to conform to prevailing quotations. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Cash corn is reported coming into market in light volume during the current week. Market still tight. Quotations continue unchanged. Pearl is currently quoted at $3.72 per 100 pounds. The powdered grade is currently quoted at $3.82 per 100 pounds. All prices f. o. b. Chicago.

SULPHATE OF ALUMINA—Market situation in sulphate of alumina is reported satisfactory. Quotations continue unchanged. Prices on the commercial grades are quoted at from $1.15 to $1.25 per 100 pounds. The iron free is currently quoted at $2.35 per 100 pounds. All prices in car lots, in bags, f. o. b. works.

SULPHUR—Demand is reported steady for sulphur. Quotations on all grades continue unchanged. Annual contracts are currently quoted at $16 per long ton, f. o. b. mines. The current contract price at Gulf Ports remains unchanged at $17.50 per long ton.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

News, per ton—

Roll, contract...	*$58.00	@	—
Sheets	64.00	"	—

* OPA Maximum Price.

Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill

Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping...	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag.....	*4.375	"	—

* OPA Manufacturers' Prices.

Tissues—Per Ream—Carlots

White No. 1.....	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2.....	.90	"	—
Anti-Tarnish M.F..	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—

Toilet—1 M. Sheets—Per Case

Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet...	5.70	"	—

Paper Towels, Per Case—

Unbleached, Jr.....	2.20	"	—
Bleached, Jr.....	3.20	"	—

Manila—per cwt.—C. l. f. a.

No. 1 Jute.....11.25		@	—
No. 1 Manila Wrapping, 35 lb.....	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.....	5.75	"	6.00

Boards, per ton—

News	*48.00	@	—
Chip	*48.00	"	—
Sgl. Mla. Ll. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards....	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds	Ledgers
No. 1..	$10.55@$12.75	$11.70@$14.25
No. 2..	9.65 " 11.75	10.80 " 13.25
No. 3..	9.20 " 11.25	10.35 " 12.50
No. 4..	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated...	$13.65@$15.50
No. 2 Glossy Coated...	12.40 " 14.00
No. 3 Glossy Coated...	11.60 " 13.25
No. 4 Glossy Coated...	11.15 " 12.75
No. 1 Antique (watermarked)	10.25 " 11.75
No. 2 Offset.....	9.60 " 11.00
A Grade E. F.....	9.35 " 10.75
A Grade S. & S. C....	9.60 " 11.00
B Grade E. F.....	8.85 " 10.25
B Grade S. & S. C....	9.10 " 10.50
C Grade E. F.....	8.55 " 9.75
C Grade S. & S. C....	8.80 " 10.00
D Grade E. F.....	8.25 " 9.50
D Grade S. & S. C....	8.50 " 9.75

Ivory & India at $.50 cwt. extra

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight Not Exceeding OPA Allowances

Bl. Softwood Sulphite.....	$86.00
Unbl. Softwood Sulphite.....	74.00
Bl. Hardwood Sulphite.....	83.50
Unbl. Hardwood Sulphite.....	71.50
Bl. Mitscherlich ...	81....
Unbl. Mitscherlich ... 72.00 @	82.00
N. Bleached Sulphate.....	86.00
S. Bleached Sulphate.....	79.00
N. Semi-Bleached Sulphate	8[illegible]
S. Semi-Bleached Sulphate	75.0
N. Unbl. Sulphate.....	73.00
S. Unbl. Sulphate.....	63.50
Bl. Soda	72.00
Unbl. Soda	68.00
Groundwood	50.00

Transportation Allowances Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area).....	10.50
West Coast (out area).....	16.50

	50%-80% Air Dry Weight
Northeast	$11.50
Lake Central	11.50
Southern	14.00
West Coast (in area).....	9.50
West Coast (out area).....	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area).....	7.50
West Coast (out area).....	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1..	6.50	@	7.25*
Silesias No. 1.....	—	"	5.75*
New Unbleached...	6.75	"	7.50*
Blue Overall.....	—	"	5.50*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki Cuttings	—	"	3.50*

* OPA Maximum Prices.

No. 20 RAG CUTTER

One of several types used by leading makers of papers. This machine has a capacity of 4 tons of rags an hour. Let us know your rag cutting needs.

TAYLOR-STILES & COMPANY

10 BRIDGE STREET RIEGELSVILLE, N. J.

For High-Speed, Dependable

PAPER CONVERTING MACHINES

contact

POTDEVIN

Paper Bag Machines, Aniline & Oil-Ink Presses, Waxing, Gluing, Varnishing, Laminating Machines.

POTDEVIN MACHINE CO.

1223 38TH ST. BROOKLYN, N. Y.

WORKING **LIBERTY**

AFTER 116 YEARS

Continuous service to the paper industry today—we are devoting our engineering and manufacturing facilities to the production of machines or parts vital to the war and to victory. However your maintenance and repair requirements will receive our best attention.

THE SMITH & WINCHESTER

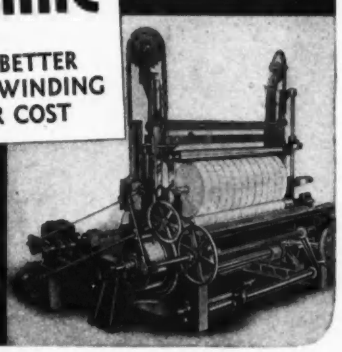
MANUFACTURING COMPANY

Plant and Offices at South Windham, Connecticut

CAMACHINE

means

FASTER AND BETTER SLITTING AND WINDING — AT LOWER COST



CAMERON MACHINE COMPANY

61 Poplar Street, Brooklyn, New York

MIDWEST OFFICE: Harris Trust Building 111 West Monroe Street, Chicago

PRICE & PIERCE »»»»»»»ltd•

Wood Pulp & Paper Agents

60 East 42 Street New York, N. Y.

More than just a **TRADE MARK**

EXCELSIOR KNOX Woolen Co. Camden, Me. FELTS & JACKETS

BUT also a guarantee by men who for 78 years have prided themselves in making finer felts. TO YOU —this is the mark of dependability, longer felt life and greater saving.

KNOX WOOLEN CO.

CAMDEN, MAINE.

Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags

New Dark Cuttings	2.25	●	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.25	●	4.35
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	5.00
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	5.50	"	—
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	2.00	"	—

* OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	●	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
Mixed Books	.85	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.15	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
Old Corrugated Containers	.82½	"	—
Mill Wrappers	.85	"	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	●	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.26	"	—
Unpolished—			
Box	.17½	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—

(Hard Fiber)

Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill.)

Shirt Cuttings—	
New White No. 1	.07¼
New White No. 2	.05¾
Light Silesias	.05¾
Black Silesias, soft	.03¾
New Unbleached	.07½
Washable Prints	.04¼
Washable No. 1	.03
Blue Overall	.05½
Cottons—According to grades—	
Washable shredding	.01¾
Fancy Percales	.04¾
New Black Soft	.03¼
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.03½
Bleachable Cotton Cuttings	.04¼
Men's Corduroy	.03½
Ladies' Corduroy	.03
Cottonades	.03¼

Domestic Rags (Old)

White No. 1—Repacked	3.80	"	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
White No. 2—Repacked	2.90	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
No. 1 Clean bright—			
Sisal Strings			.04
No. 2 Clean bright—			
Sisal Strings			.03
Sisal Jute	.02½	"	.02¾
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.80
Wool Tares	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Overissue News	.85	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.15	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	3.25	●	—
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	2.00	"	—
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	5.25	"	—
Jute Cer ✱ Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.50	"	—
Wool Tares—			
Foreign	(nominal)		

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices

No. 1 Hard White Shavings, unruled	2.87½	●	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Overissue News	.85	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.15	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	3.25	●	—
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	2.00	"	—
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	5.25	"	—
Jute Cer ✱ Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.50	"	—
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	—
Aust. Wool Pouches	3.75	"	4.00
New Burlap Cuttings	4.75	"	5.00
Heavy Baling Bagging	4.00	"	4.25
Paper Mill Bagging	2.50	"	3.00
No. 2 Roofing Bagging	1.35	"	—

* OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	●	.04¾
Fancy Percales	.04¼	"	.04
New White No. 1	.06¾	"	.07
New Light Flannelettes	.05½	"	.06
Canton Flannels, Bleached	.06	"	.06¼
Underwear Cutters, Bleached	.06¼	"	.06¾
Underwear Cutters, Unbleached	.05¾	"	.06
Silesias No. 1	.06	"	.06¼
New Black Silesias	.03	"	.03¼
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.06½	"	.06¾
Blue Cheviots	.05½	"	.06
Fancy	.02¾	"	—
Washable	.02¾	"	.03
Khaki Cuttings	.02¾	"	.03
O. D. Khaki	.03½	"	.03¾
Corduroy	.03¼	"	.03½
New Canvas	.06¼	"	.06¾
B. V. D. Cuttings	.06¼	"	.06¾

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	●	—*
Miscellaneous	3.20	"	—*
White No. 2—			
Miscellaneous	2.65	"	—*
Twos and Blues, Repacked	2.20	"	—*
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—*
Miscellaneous	1.80	"	—*
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—*
No. 2	1.45	"	—*
No. 3	1.35	"	—*
No. 4	1.35	"	—*
No. 5, Quality A	1.35	"	—*
Quality B	1.20	"	—*
Quality C	.95	"	—*
Old Manila Rope	5.75	"	—

* OPA Maximum Prices.

Foreign Rags

(F. o. b Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices.

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	1.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Misc.	2.15	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Box Board Cuttings	.72½	"	—
Kraft Corrugated Cuttings	2.25	"	—
Old Corrugated Containers	1.15	"	—
Overissue News	.85	"	—
No. 1 News	1.00	"	—
No. 1 White Ledger	2.17½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
No. 1 Roofing Rags	1.55	"	—
No. 1 Roofing Bags	1.45	"	—